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U.S. ENVIRONMENTAL PROTECTION AGENCY  
REMOVAL ACTION

ADMINISTRATIVE RECORD  
FOR  
SOUTH GREEN AVENUE SITE  
(MICHCON STATION H)  
DETROIT, WAYNE COUNTY, MICHIGAN

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14155 Farmington Road  
Livonia, MI 48154-5122  
Tel. 734.524.9610  
Fax. 734.524.9611

A Member of The IT Group

**EXCAVATION/OFF-SITE DISPOSAL REMOVAL ACTION WORK PLAN  
SOUTH GREEN AVENUE SITE  
DETROIT, MICHIGAN**

May 24, 2001

Project 106115

Prepared for:  
**Michigan Consolidated Gas Company**  
500 Griswold Street  
Detroit, Michigan 48226

Submitted by:  
IT Corporation  
14155 Farmington Road  
Livonia, MI 48154

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## 2.2 Previous Environmental Assessments

Previous environmental assessments conducted at the Site are summarized below:

- In 1984/1985, EDI Engineering & Science (1985) investigated the Site on behalf of MichCon. This investigation consisted of perched groundwater and soils sampling/analysis, the installation of three (3) monitoring wells and determination of perched groundwater flow direction.
- In November 1997, MichCon inspected the Site and noted more than 30 drums (some of which were leaking unknown chemicals), partially buried drums and vehicle gasoline tanks, piles of asphalt shingles, containers of asphalt driveway and roofing compounds, abandoned vehicles, at least 200 tires and other debris.
- In February 1998, a U.S.EPA contractor (START) conducted a site assessment. Soils around two (2) rusted and decayed capacitors were observed to be stained with oil. An analysis of a sample collected from the capacitor showed PCB concentrations of 100,000 parts per million (ppm). These results are presented in a September 11, 1998 correspondence from Ecology and Environment, Inc. to the U.S.EPA. According to the U.S.EPA's findings, as stated in the AOC, the capacitors were located beneath the high voltage power line tower situated east and outside of the former MGP property. MichCon has no record that the Detroit City Gas Company owned or operated these capacitors.
- A Work Plan for Conducting an Environmental Assessment to Support an Engineering Evaluation/Cost Analysis pertaining to the South Green Avenue Site was prepared by IT Corporation (formerly Fluor Daniel GTI) on behalf of MichCon. This work plan was subsequently approved by the United States Environmental Protection Agency on November 18, 1998. The environmental assessment was subsequently conducted by IT Corporation in December 1998 and January 1999 and consisted of a test pit assessment (26 areas), soil and perched groundwater sampling/analysis, installation of eleven (11) monitoring wells and a hydrogeologic assessment. The environmental assessment results are presented in IT Corporation (1999).
- In June 1999, waste characterization samples were collected according to an U.S.EPA approved work plan. This plan presented procedures to collect data to determine if the Site soils would be defined as hazardous or non-hazardous. Although there was one anomalous sample, the sampling data indicate that the soils are non-hazardous. Four (4) waste characterization samples and three (3) surface soil samples did not exhibit the characteristics of a hazardous waste. The only sampling area that produced any conflicting results was test pit 23 (TP-23), but re-testing at that location indicated that the initial results may have been incorrect. The leachate from the initial Sample TP-23 Characterization sample jar contained lead at 35 mg/L, exceeding the regulatory toxicity lead level of 5 mg/L. Two (2) additional leachate samples were prepared from another TP-23 Characterization sample jar and were analyzed for lead. The concentrations of lead in these two (2) samples were 0.012 mg/L and 0.025 mg/L. The waste characterization results are presented in the EE/CA.

## 2.3 Geology/Hydrogeology

The regional geology in the vicinity of the Site consists predominately of Quaternary glacial-lacustrine clay deposits and recent fluvial deposits. Underlying these deposits is a thick ground moraine consisting primarily of clay with some pebbles. The total thickness of the Quaternary and recent deposits in the vicinity of the Site ranges from approximately 80 feet to 115 feet.

According to the drilling logs of industrial wells located approximately two (2) miles northwest of the Site, the Quaternary deposits consist of clays that directly overlie bedrock. The bedrock underlying the recent and glacial deposits consists of the Dundee limestone formation and the Traverse Group formations that are Devonian in age.

The subsurface soils of the Site consist of eight (8) to ten (10) feet of fine to medium sands and fill materials with a little silt and gravel underlain by a thick clay unit. The clay was encountered in all soil borings drilled on the Site and extended down to at least 30 feet below the surface. The depth to the top of the clay ranged from eight (8) feet below the surface to ten (10) below the surface.

On January 18, 1999, the depth to perched groundwater ranged from 5.94 feet below the surface (MW-8) to 8.2 feet below the surface (MW-10) and the direction of groundwater flow on December 21, 1998 and January 18, 1999 was towards the south-southwest. An aquifer is defined as "a geological formation, group of formations, or part of a formation capable of yielding a significant amount of groundwater to wells or springs" (MDEQ, Part 201 Rules).

The following Site information indicates that the groundwater contained in the upper subsurface zone of the Site would not yield a significant amount of groundwater to wells or springs:

- Clay was encountered in the Site soil borings from eight (8) feet to 30 feet below the surface. Drilling logs from industrial wells installed in the Site area indicate that this clay extends to at least 80 feet below the surface. Because of the continuous, thick clay unit, the perched groundwater is not laterally or vertically connected to a lower aquifer.
- Crock wells are not used as a private potable water supply within the City.
- The saturated thickness of the perched water-bearing zone measured in December 1998 and January 1999 was only 2.4 feet. Based on the shallow, thin, perched water-bearing zone, a well installed in this zone is not expected to yield a significant amount of groundwater.
- The installation of water wells for any purpose within the City will not be approved by the City of Detroit Health Department (verbal communication on February 11, 1999 with Mathew Sam of the City of Detroit Health Department).

## 2.4 Nature and Extent of Soil Contamination

The chemicals of potential concern (COPC) in soil consist of BTEX, PAHs, bis(2-ethyl hexyl)phthalate, lead, free cyanide and PCBs. Weak-acid dissociable cyanide and total cyanide analyses were used to conservatively evaluate free cyanide. Free cyanide was not directly measured because there is no generally accepted U.S. EPA test method to directly measure free cyanide in groundwater. In the context of analytical methods, "cyanide or cyanides refers to the group of simple and complex chemical compounds that can be determined as cyanide ion... Most of the metal cyanides are insoluble or only slightly soluble in water but may form a variety of soluble cyanide complexes when a cyanide such as potassium or sodium cyanide is present" (U.S. EPA, 1998)

The health studies used to assess the risk from cyanide have "been performed with the pure chemical" (ATSDR, 1993) (i.e. free cyanide), but cyanide is usually found in the environment combined with other substances, such as hydrogen cyanide, silver cyanide or ferric ferrocyanide (FFC). Free cyanide interacts with the blood in humans to cause the adverse health effects. Thus, if the cyanide is bound to other substances, it does not have the same effect. The cyanide in hydrogen cyanide is easily released as free cyanide. Some cyanide compounds are associated with other substances and may under some circumstances release free cyanide. Cyanide complexed with metals is tightly bound to the metals and does not release free cyanide, for example, FFC (U.S. EPA, 1998). Cyanide found at manufactured gas sites is typically in the iron complex form (ATSDR, 1995).

The total cyanide test method uses rigorous chemical means to break down the complexes and other forms of cyanide so that all of the free cyanide which is tightly held in the complex compound is released. The total cyanide test measures free cyanide, weak-acid dissociable cyanide and complexed tightly bound cyanides, such as FFC (U.S. EPA, 1998). As a result, the total cyanide test method is considered by the U.S.EPA to be a screening method (U.S.EPA, *Technical Drinking Water and Health Contaminant Specific Fact Sheet- Cyanide*, [www.epa.gov/ogwdw00/dwh/t-ioc/cyanide.html](http://www.epa.gov/ogwdw00/dwh/t-ioc/cyanide.html)) because free cyanide levels measured cannot actually occur in the environment. For similar reasons, the MDEQ also considers the total cyanide test method to be a "conservative screen" (MDEQ, 1999).

Thus, any evaluation of the risk from cyanide compounds should use bioavailable concentrations of cyanide and not total cyanide concentrations. However, the risk assessment conducted as part of this EE/CA used the total cyanide concentrations as a conservative evaluation. The MDEQ has specified, however, that method OIA-1677 is an acceptable analytical method to quantify bioavailable cyanide in soil. According to the MDEQ, method OIA-1677 "may be used to quantify cyanide concentrations for compliance with soil criteria" (MDEQ, 2000). Therefore, all future soil analysis for cyanide will include the OIA-1677 method.

#### **2.4.1 Surface Soil**

The concentrations of the constituents of concern detected in the surface soil samples (less than two (2) feet below the surface) are presented in **Table 1** and the sampling locations are presented on **Figure 5**. As indicated by the data in this table, The ranges of BTEX in these samples are as follows:

- Benzene: <10 ug/Kg (3 samples) to 70 ug/Kg (MW-3 Surface);
- Toluene: <10 ug/Kg (7 samples) to 120 ug/Kg (MW-7 Surface);
- Ethylbenzene: <10 ug/Kg (7 samples) to 30 ug/Kg (MW-7 Surface); and,
- Xylenes: <30 ug/Kg (8 samples) to 270 ug/Kg (MW-7 Surface).

The concentrations of the PAHs detected in the surface soil samples are presented in **Table 1**. Phthalates were only detected in two (2) samples (HA-1 and MW-7 Surface) and only one phthalate (bis(2-ethyl hexyl) phthalate) was detected in these samples. As previously mentioned, this compound is not typically associated with MGP operations. The ranges of lead, total cyanide and weak-acid dissociable cyanide in the surface soil samples are as follows:



exposures was evaluated in the risk assessment in addition to potential construction worker exposures for subsurface soil exposures. Evaluating future industrial land uses is consistent with the U.S.EPA's guidance document (U.S.EPA, 1995) and with the U.S.EPA's selection of an industrial land use action level for PCBs during their 1998 removal actions.

The conceptual site model for the risk assessment included the following human health receptors exposure scenarios:

- On-site industrial worker;
- On-site construction worker; and,
- On-site trespasser.

The risk assessment evaluated the reasonable maximum exposures to the above receptors for the following exposure routes:

- Incidental ingestion of surface soil (industrial worker and trespasser);
- Inhalation of fugitive dusts and volatile organics in surface soil (industrial worker and trespasser);
- Dermal contact with chemicals in surface soil (industrial worker and trespasser);
- Incidental ingestion of subsurface soil (construction worker);
- Inhalation of fugitive dusts and volatile organics in subsurface soil (construction worker);
- Dermal contact with chemicals in subsurface soil (construction worker);
- Dermal contact with chemicals in perched groundwater (construction worker).

Exposure point concentrations in soil (the concentration of a contaminant in an exposure medium that will be contacted by an actual or hypothetical receptor) were calculated according to U.S.EPA guidance documents for the following COPC: benzene, toluene, ethylbenzene and xylenes (BTEX), polynuclear aromatic hydrocarbons (PAHs), cyanide, lead, PCBs and selected phthalates. The exposure point concentrations presented in the EE/CA were used to quantify chronic exposures for the identified pathways. These exposure point concentrations are presented in **Table 3**.

The risks posed by the contaminants in soils and perched groundwater were characterized by integrating exposure and toxicity assessments. Quantitative risk estimates were calculated for cancer risk and noncancer hazards and were summed for all COPC in each pathway. Generally, cancer risk estimates below  $1 \times 10^{-6}$  are considered negligible. A cancer risk of  $1 \times 10^{-6}$  is considered a point of departure, above which concern arises. However, the U.S.EPA uses the general  $10^{-4}$  to  $10^{-6}$  cancer risk range as a "target range" within which the Agency strives to manage risks as part of the cleanup. For noncancer risks, a hazard index below 1.0 is considered acceptable; above 1.0 indicates concern about the occurrence of adverse noncancer effects. A summary of the calculated risks is presented below:

**Industrial Worker Risk from Surface Soil Exposures.** At  $7.0 \times 10^{-5}$ , the total cancer risk for the Industrial Worker exposed to surface soil (less than 2 feet below the surface) falls within the U.S.EPA target range of  $1 \times 10^{-5}$  to  $1 \times 10^{-4}$ . Carcinogenic risk is primarily driven by benzo(a)pyrene (BaP) through ingestion, with a cancer risk for BaP of  $4.2 \times 10^{-5}$ . The total noncancer hazard ( $2.4 \times 10^{-3}$ ) for exposures to surface soil is below the target of 1

**Trespasser Risk from Surface Soil Exposures.** At  $1.7 \times 10^{-5}$ , the total cancer risk for the Trespasser exposed to surface soil falls within the U.S.EPA target range of  $1 \times 10^{-6}$  to  $1 \times 10^{-4}$ . Carcinogenic risk is primarily driven by BaP through ingestion, with a cancer risk for BaP of  $1.1 \times 10^{-5}$ . The total noncancer hazard ( $2.1 \times 10^{-3}$ ) for exposures to surface soil is below the target of 1.

**Construction Worker Risk from 0 to 4 Feet Depth Interval Soil Exposures.** At  $7.9 \times 10^{-5}$ , the total cancer risk for the construction worker exposed to subsurface soil is within the U.S. EPA target range of  $1 \times 10^{-6}$  to  $1 \times 10^{-4}$ . The total noncancer hazard ( $2.6 \times 10^{-1}$ ) for exposures to subsurface soil is less than the target of 1.

**Exposure to Soil Lead.** The representative concentration of lead in surface soil is 622 mg/Kg, which is below the U.S.EPA screening criteria of 1,414 mg/Kg for industrial workers.

**Construction Worker Exposure to Groundwater.** The construction worker receptor was evaluated for direct contact (dermal exposure) to perched groundwater. Cancer risk was estimated at  $6.2 \times 10^{-8}$  and noncancer hazard was  $1.1 \times 10^{-3}$ . Total risk and hazard for exposures to perched groundwater are within target limits.

In summary, when evaluating potential risks associated with exposures to soil and perched groundwater at the Site using reasonable land use assumptions (i.e. current and future industrial/commercial and use), cancer risk and noncancer hazard have been found to be within or below the U.S.EPA's target range of  $10^{-6}$  to  $10^{-4}$  for carcinogens and a hazard index of 1 for noncarcinogens. Soil lead levels are acceptable for industrial/commercial land use scenarios.

## 2.6 Waste Characterization

Four (4) waste characterization samples collected in June 1999 indicate that the subsurface materials do not exhibit the characteristics of a hazardous waste, with the exception of sample TP-23 Characterization. These results were presented in the EE/CA and are summarized in **Table 4**. The leachate from TP-23 Characterization exceeded the regulatory level for toxicity of lead. However, two (2) additional leachate samples from the TP-23 Characterization samples did not exceed the regulatory level for lead. Therefore, all the subsurface materials that will be addressed during the removal actions will be classified as non-hazardous.

### 3.0 REMOVAL ACTIONS OBJECTIVE

As stated in the EE/CA, the removal action objective that has been identified is to ensure that hazardous substances, pollutants or contaminants in subsurface bulk storage containers (i.e. tar tanks, tar wells, gas holders) do not pose a threat of release to the environment. A discussion of the estimated volume of materials required to be removed to meet this objective and the cleanup criteria used to evaluate the effectiveness of the removal actions is presented below.

#### 3.1 Site Area Where Potential MGP Wastes Are Indicated

Based on the distribution of the constituents of concern in soils and the observations of potential MGP wastes recorded during the test pit investigation, the estimated maximum area that will be addressed by future removal actions consists of the approximately 42,715 square foot area shown on **Figure 6**. This area comprises the locations of some of the former MGP structures (i.e. tar tanks, gas holders). The clay, encountered at eight (8) to ten (10) feet below the surface, has not been impacted. Removal actions are not required to address the clay. The estimated maximum volume of materials to be addressed within this 42,712 ft<sup>2</sup> area is 427,120 ft<sup>3</sup> (42,712 ft<sup>2</sup> x 10 ft) or 15,820 yds<sup>3</sup>. Assuming a 20% expansion factor, an estimated maximum of 19,000 yd<sup>3</sup> of materials will need to be removed. This estimated maximum volume assumes that all the materials from the surface to the top of the clay will need to be removed. However, much of the contamination may be localized or found in "hot spots". During the removal actions, the excavation will end when Site boundaries are reached or the average concentrations at the Site after excavation, as determined using the 95 percent upper confidence level, fall below acceptable levels as determined according to MDEQ's Part 201 guidance.

Based on the test pit assessment, approximately 1,467 yds<sup>3</sup> of the 19,000 yds<sup>3</sup> estimated maximum volume consists of concrete and other subsurface debris. Therefore, the estimated maximum volume of soil/materials, other than concrete, to be removed is 17,533 yds<sup>3</sup>. The estimated volume of concrete does not include the concrete foundations of the two (2) gas holders. These foundations were inspected during the test pit assessment and were observed to be in good condition. Therefore, the removal of the subsurface concrete gas holder foundations is not required. These foundations will be re-inspected during the removal actions to ensure that they are not impacted.

#### 3.2 Soil Cleanup Criteria

The MDEQ has established generic cleanup criteria pursuant to Part 201 of Public Act 451 of 1994, as amended for the COPC. These generic cleanup criteria are based on generic human health risk assessment assumptions determined by the MDEQ to appropriately characterize patterns of human exposure associated with certain land uses in Michigan. Section 20120a(2) of Part 201 states that site-specific criteria can be calculated and used as cleanup criteria. Therefore, it is possible under Part 201 to use site-specific cleanup criteria in lieu of the MDEQ's generic cleanup criteria.

Potential MGP wastes were detected in the test pits excavated within the two (2) gas holders (TP-4 and TP-9). The soil analytical data from these two (2) test pits (**Table 2**) indicate that the COPC present in the potential

MGP waste materials are BTEX, PAHs and cyanide. Therefore, the concentrations of BTEX, PAHs and available cyanide in samples collected from the subsurface subsequent to the removal of the potential MGP wastes will be compared to industrial soil cleanup criteria (generic and/or site-specific) developed pursuant to Part 201 to evaluate the effectiveness of the removal actions. The MDEQ's generic cleanup criteria (MDEQ, 2000) for the COPC are listed in **Table 4**. This table also presents the calculated exposure point concentrations for comparison purposes. However, if future land uses are consistent with the MDEQ's Commercial III land use category, commercial cleanup criteria will be developed pursuant to Part 201 and utilized to evaluate the effectiveness of future removal actions.

## 4.0 REMOVAL ACTION SCOPE OF WORK

The scope of work outlined in the following sections details the site preparation, excavation, soil staging (if necessary), backfilling and site restoration. The removal action will include the following:

- Permitting;
- Site preparation;
- Dewatering;
- Site demolition;
- Excavation;
- Material transportation;
- Confirmation sampling; and,
- Backfill and site restoration.

### 4.1 Permits

Permits and plans will be prepared and submitted to the appropriate agencies, as necessary. The following permits and approvals have been identified and are listed below:

- Soil erosion and sediment control plan and permit – This plan along with the permit will be submitted to Wayne County Department of Environmental Quality.
- Access Permit for Water Usage – A permit to use water from a fire hydrant will be prepared and submitted to the City of Detroit Water Department.

Copies of these permits will be posted in the site trailer during implementation of the removal action. No other permits or plans or approvals have been identified for completion of the removal action.

### 4.2 Site Preparation

Site preparation will include completion of the following activities:

- Mobilization;
- Health and Safety;
- Initial Survey to verify Site Conditions;
- Tank Water Characterization;
- Setup Temporary Facilities and Material Storage Areas;
- Fencing;
- Installation of Erosion and Sediment Controls;
- Tank Dewatering; and,
- Identification of Utilities.

#### 4.2.1 Mobilization

Mobilization will include mobilizing personnel and equipment to the site and verifying existing site conditions. Due to timing and space considerations, mobilization of some equipment and materials will be performed in stages, as needed. However, the majority of mobilization will occur at the outset of the project.

#### **4.2.2 Health and Safety**

A site-specific Health and Safety Plan was prepared and previously submitted to the U.S. EPA. This safety plan was approved by the U.S. EPA on November 18, 1998. The safety procedures specified in the plan will be reviewed with site personnel and the required safety equipment will be procured.

#### **4.2.3 Verify Existing Site Conditions**

An initial survey will be performed to inspect the property boundaries, confirm the site features, and mark the proposed excavation area. The following items will be located and marked in the field:

- Property boundary fence location;
- Construction fence locations;
- Existing Utilities; and,
- Erosion control structures (silt fence, berms, storm drains).

#### **4.2.4 Tank Water Characterization**

Two (2) composite liquid samples will be obtained before excavation activities commence. One composite sample will be collected from the subsurface structures (Tar Tank, Oil & Tar Tank Separator, and Tar Wells). One composite sample of groundwater will also be collected from existing monitoring wells MW-7 and MW-10 that are located within the excavation area. These samples will be used to characterize waters for off-site disposal.

#### **4.2.5 Setup Temporary Facilities and Material Staging Areas**

Temporary facilities will include one small office job trailer for the contractor, two (2) portable toilets, and one 20,000-gallon frac tank. Office trailer and frac tank will be mobilized to the site and staged in a convenient area. The office trailer will be leveled, anchored to the ground, and steps/walkways installed to the trailers as necessary. Portable toilets will be maintained near the office trailers. Temporary utilities (electricity, phone) will not be provided due to the limited duration of the expected excavation activities. Cellular phones will be utilized for communications by site personnel.

#### **4.2.6 Fencing**

A chain-link fence was constructed on-site to prevent trespassing and maintain site security. One or two (2) gates will be installed to allow for truck and personnel traffic. Orange high-visibility fence will be used on-site as necessary to direct traffic and protect workers and site features.

#### **4.2.7 Installation of Erosion and Sediment Controls**

Temporary erosion and sediment control measures will be installed to control stormwater run-on and run-off from the site. These measures may include silt fencing, berms, dikes, drains, or basins as necessary to control stormwater. Surface water that enters the excavation will be pumped to the on-site storage tank for

off-site disposal. To protect against silt-laden waters from entering existing storm drains, control measures will be installed as appropriate for catch basins along South Post and South Green Avenue. Temporary controls will be maintained until completion of the project and then removed as necessary for site restoration.

#### **4.2.8 Tank Dewatering**

Upon receipt of approval for disposal, liquids from these structures will be pumped into a tanker or into the frac tank (20,000-gallon capacity) for subsequent off-site disposal at Dynecol, Inc located in Detroit, Michigan.

#### **4.2.9 Identification of Utilities**

MichCon will locate and mark the underground gas line along the eastern edge of the Site. MISS DIG will be contacted to have underground utilities marked along South Green Avenue and Post Street near the Site. The City of Detroit Water and Sewerage Department will be contacted to locate sewer and water lines that may be situated within the Site.

### **4.3 Concrete Demolition and Debris Management**

Surface concrete and asphalt pavement will be removed and either loaded directly into trucks for off-site disposal or temporarily stockpiled on-site for subsequent disposal or recycling as appropriate. As discussed in **Section 3.1**, the existing concrete foundations for the two (2) gas holders may remain in place.

As the excavation progresses, the excavator will be used to break and remove any concrete as necessary to remove impacted soil. Concrete, brick, wood, metal, broken glass, and other miscellaneous debris will most likely be encountered in the excavation. This material will be reduced in size using the excavator and transported with impacted soil for disposal at the landfill. Debris will be segregated if large pieces of debris cannot be size reduced manually or with the excavator. A breaker or other appropriate equipment will be used as necessary to reduce the oversized debris.

### **4.4 Excavation Activities**

#### **4.4.1 Excavation**

After removal of the surface pavement, the excavation will remove impacted soil and subsurface structures as necessary. Impacted materials may consist of tar, tar-stained soils and/or soils discolored by MGP materials. Unimpacted overburden soils will be removed to expose the impacted materials. According to the City of Detroit's April 30, 2001 access agreement with MichCon, "any and all excavation areas" should be backfilled with "clean engineered fill". Therefore, unimpacted overburden and impacted materials will be loaded directly into trucks for transportation to an off-site landfill for disposal. The working face for the excavation will be minimized. The excavation depth will be approximately 8 to 10 feet below the ground surface. The target depth of excavation is the underlying clay that is encountered across the site. This clay was determined to be unimpacted. During excavation temporary sumps will be dug in the excavation areas as necessary to

minimize the amount of free standing water in the excavation. Wet and dry materials will be combined to reduce the moisture content of the soil for off-site disposal.

The estimated maximum excavation limits are shown on **Figure 6**. The actual limits of the excavation will be determined based on the absence of visually impacted materials, the results of confirmation sampling and/or the Site property boundaries.

#### **4.4.2 Dewatering and Water Management**

Controls will be implemented to direct non-impacted surface water away from the work area. These controls will consist of the soil berms, sloping of clean surfaces away the work area, and other measures. All surface water that enters the excavation area will be controlled and pumped into the frac tank for off-site disposal.

Groundwater will be encountered during the excavation work. Sumps will be dug in the excavation to control and collect water. Standing water in the excavation will be pumped as necessary to the frac tank for off-site disposal.

#### **4.4.3 Soil Stockpiling**

Overburden and impacted materials will either be loaded directly onto trucks for transportation to an off-site landfill for disposal or will be stockpiled in the excavation at the working face for the excavator. The stockpiling of impacted materials is not anticipated. If it becomes necessary to stockpile impacted materials, the stockpile will be covered on all sides with visqueen as necessary.

If the stockpiling of backfill materials is required, the stockpile will be constructed and maintained appropriately.

#### **4.4.4 Hours of Operation**

Excavation activities will be conducted during normal working hours from approximately 6:30 AM to 5:30 PM Monday through Friday. These hours may be adjusted depending on-site conditions.

Before excavation activities begin each day, a daily tailgate safety meeting will be held and all workers will sign into the project site. During this period, appropriate documents will be passed from the previous day. A brief update will be given, problems will be identified, and corrective measures will be assessed. In addition, monitoring equipment will be calibrated, air monitoring of work areas will be conducted, and ambient air sample pumps will be positioned. Temporary fencing will be removed and any other necessary preparations will be completed to begin excavation activities.

At the end of each day the excavation area will be secured and aboveground stockpiles will be covered using plastic sheeting as necessary. All workers will sign out of the project site. During this period, appropriate documents will be prepared for the next daily meeting.



Once enough water is generated, the water will be transported in licensed tanker trucks or other appropriate containers for disposal off-site.

Currently, the anticipated disposal facility for the water will be Dynecol Inc. in Detroit, Michigan. Water generated during the project will be transported to the disposal facility under a Non-Hazardous Waste Manifest. Each manifest will have a distinct number and indicate the transporter, disposal location, quantity, and unit of measure.

## **4.6 Confirmation Soil Sampling**

### **4.6.1 Sampling Procedures**

Soil samples will be collected from the excavation sidewalls and floor to confirm the removal of the MGP waste materials. The determination of the number of sidewall and floor samples was based on the approximate maximum extent of the excavation area (**Figure 6**) and on *Verification of Soil Remediation Guidance Document* (MDEQ, 1994) (VSR).

The perimeter of the potential excavation area shown on **Figure 6** is 870 feet. The maximum depth of the excavation is anticipated to be 10 feet. Discrete soil samples will be collected from the excavation sidewalls every 50 feet. A minimum of one sample will be collected from every sidewall. Each sidewall sample will be collected at one of the following locations:

- Mid-point of sidewall;
- Adjacent to excavated MGP waste materials; or,
- Within area stained by MGP waste materials.

The VSR uses gridding to facilitate the determination of the appropriate number of confirmation samples. The VSR specifies that the spacing of the grid intervals and the selection of the number of samples should be "proportional to the size of the area". The potential excavation area shown on **Figure 6** is approximately 42,715 ft<sup>2</sup>. For an area this size, the grid interval was calculated to be 29 feet. A grid with this interval was superimposed on the potential excavation area and 62 grid nodes were situated within this area. According to the VSR, "a minimum of 12 samples or 25%, whichever is larger, of the total grid stations (nodes) should be sampled....". Twenty-five percent of 62 nodes is 15.5. Therefore, the maximum number of excavation floor samples that will be collected is 16. The actual number will be determined according to VSR guidance and the actual dimensions of the excavation.

Sidewall and floor samples will be collected using and a decontaminated stainless steel sample shovel or tool and En Core™ samplers (5 or 25 gram; for BTEX analysis only).

The laboratory results will be statistically analyzed according to EPA guidance and/or VSR. If the calculated 95% upper confidence limit is below the cleanup criteria, backfilling operations will begin. If the cleanup criteria is exceeded, additional soil will be excavated if feasible (i.e. Site boundaries not reached) at the appropriate locations and additional samples will be collected. Because samples will be collected as the

excavation proceeds, there may be insufficient samples to use statistical analyses at the beginning of the project. Efforts will be made to ensure that the initial excavation areas are below the cleanup criteria.

#### **4.6.2 Analytical Methods**

Each excavation soil sample will be sent to a laboratory for analysis of the following:

- BTEX (EPA Method 5035/8260);
- Polynuclear aromatic hydrocarbons (EPA Method 8270);
- Total cyanide (EPA Method 9010A); and,
- Available cyanide (OIA-1677).

#### **4.6.3 Quality Assurance/Quality Control**

IT's Quality Assurance/Quality Control procedures will be adhered to during all assessment/sampling activities. These procedures include, but may not be limited to, the following:

- Analytical samples will be accompanied by a properly completed chain of custody form. The sample numbers and locations will be listed on the chain of custody form. When transferring the possession of samples, the individuals relinquishing and receiving will sign, date, and note the time on the record. This record documents transfer of custody of samples from the sampler to another person, to a mobile laboratory, to the permanent laboratory, or to/from a secure storage area.
- Samples will be properly packaged for shipment and dispatched to the appropriate laboratory for analysis, with a separate signed custody record enclosed in each sample box or cooler. Shipping containers will be locked and secured with strapping tape. All shipments will be accompanied by the Chain of Custody Record identifying the contents. The original record will accompany the shipment, and a copy will be retained by the sampler and returned to the sampling office. If the samples are sent by common carrier, a bill of lading should be used. Receipts of bill of lading will be retained as part of the permanent documentation.
- One trip blank will accompany every individual shipment of BTEX samples. Trip blanks are a sample of laboratory pure water which accompanies sample containers to and from the sampling location, and are shipped along with the samples, to the laboratory for VOC analysis. Trip blanks will be prepared by the laboratory, and should be labeled and treated as separate samples.
- One field blank per day will be prepared for laboratory analysis. Field blanks will be treated as a separate, individual sample for labeling and chain-of-custody purposes. Field blanks are collected using contaminant free distilled water as the sample medium. The distilled water is allowed to contact the decontaminated sampling equipment (for example, stainless steel sample tool) and then is placed into the appropriate containers for shipment and analysis. Field blanks should be obtained and analyzed for all parameters that are applicable to the samples being taken.
- One field duplicate sample will be collected for every 10 soil samples collected. Field duplicate samples will be identified and analyzed as a separate analytical sample. Field duplicates are collected using the same methods as the analytical samples.
- One matrix spike/matrix spike duplicate (MS/MSD) sample sets will be analyzed. The MS/MSD is an investigative sample which (for each applicable analytical parameter for that sample matrix) is split by the



#### **4.7.2 Final Surface Cover**

The surface cover will not be paved because other construction activities will likely take place in the future. However, hydroseed or similar covering will be provided to reduce dust and sediment erosion.

#### **4.8 Environmental Control**

Because safety and protection of the public and the environment are of major concern, special procedures were developed to conduct the activity in a safe manner, using appropriate environmental controls. Environmental control will be implemented for the following elements:

- Noise;
- Dust;
- Vapor and odor emissions;
- Storm-water and erosion control;
- Equipment decontamination;
- Spill prevention and cleanup; and,
- Abandonment of Utilities.

These elements are addressed in the following sections:

##### **4.8.1 Noise**

Noise from excavation activities will typically not exceed current noise levels from street, railroad, and air traffic. The remaining operations should not present significant concerns for the following reasons:

- The site is located in an industrial/commercial district and is surrounded on two (2) sides by a street and on one side by a railroad facility. The on-site crew close to the operating equipment will have hearing protection provided in accordance with the Site Safety Plan. The public should not be affected by noises greater than the exposure from street vehicular activities.
- The project will use conventional equipment and vehicles that are typically used during any site commercial development. Noise levels for the equipment and vehicles are typically about 100 decibels A-scale (dBA) at the source. The noise levels will decrease to less than 85 dBA at approximate distances greater than 20 feet from the equipment.

##### **4.8.2 Dust**

To comply with health and safety requirements, dust control measures were factored into the removal action scope. Major factors included in the scope are as follows:

- Part of the excavation will be from the saturated zone. The wet soil will not have the potential for emitting dust.
- Appropriate water sources and plumbing have been planned so that an adequate water supply can be provided for multiple activities at the site. The water source will be fire hydrants. During excavation of overburden soil, a water spray or mist will be used, as necessary, to minimize dust emission.

Dust levels will be monitored at the excavation area and at selected Site perimeter locations.

#### **4.8.3 Vapor and Odor Emissions**

The water spray used to control dust will also significantly reduce the emissions of volatiles from soil. If the water is not effective, vapor suppressant chemicals such as Zeps, Enviro-Chem CX, Natural 3XD, Biosolve, or Simple Green will be added to further reduce vapors and odors.

The primary odor emission expected at the site is from naphthalene. Several measures have been incorporated to mitigate the naphthalene odor. These measures include use of a minimizing the working face of the excavation, water misting to minimize vapor emissions, and mixing water with vapor suppressant chemicals during excavation as necessary. These steps will significantly reduce the potential for emission of naphthalene and other compounds.

Periodic monitoring of air quality around the excavations and the perimeter of the site will be conducted using a photo-ionization detector (PID). These instruments will be calibrated routinely according to the manufacturer's specifications. If sustained elevated readings are recorded during remedial activities, appropriate engineering control measures will be implemented to reduce the emissions. Detailed monitoring activities are outlined in the site-specific health and safety plan.

Perimeter ambient air monitoring will be conducted during excavation and backfilling activities. This monitoring will be performed from the following three (3) fixed locations within the Site: 1) At the northern section of the Site along the fence between monitoring wells MW-8 and MW-9, 2) At the middle of the Site along the eastern Site boundary between monitoring wells MW-3 and MW-2, and 3) At the southern edge of the Site along the fence near monitoring well MW-5. These locations may be revised to ensure that one station is downwind of the excavation. Ambient air samples will be collected daily at each monitoring station with air sampling pumps. Prior to sampling, all sampling pumps will be calibrated according to the pump manufacturer's specifications.

Following the completion of these activities, charcoal sorbent tubes from each air sampling pump will be capped with plastic caps, sealed in water proof plastic bags, and shipped to a laboratory certified by the American Industrial Hygiene Association as capable of performing analyses in accordance with NIOSH methodology. The samples will be analyzed for the following:

- Benzene, toluene, ethylbenzene and xylenes (BTEX) (NIOSH Method 1501);
- Naphthalene (NIOSH Method 1501); and,
- Particulates (NIOSH Method 0500).

#### **4.8.4 Decontamination Facilities and Street Maintenance**

To minimize the decontamination time for trucks transporting materials to the landfill, the following list is provided for activities:

- Impacted soil will be loaded directly into trucks for transportation to an off-site landfill for disposal.
- Loaded trucks will be inspected and swept if needed to prevent loose debris and contaminated materials from being released to the roadways. Trucks will employ tarps to cover loaded soils and debris.
- The existing surface concrete outside the excavation area will remain in place until nearly the end of excavation. This will allow proper maintenance of the ground surface to minimize truck tire contact with dirt.
- In the area between the public street and where surface concrete is removed, crushed concrete and/or aggregate will be used to minimize dirt or mud on truck tires. Continuous maintenance of truck access pathways, including the removal of dirt, will minimize the requirements for decontaminating the truck tires.
- The public street will be swept periodically as needed.

A personnel decontamination station will be set up in accordance with the site safety plan. Personnel decontamination will be used by all site participants.

#### **4.8.5 Spill Prevention**

Any on-site spills will be handled by the excavation contractor. Because site activities involve soil removal, soil spills in any non-impacted area will include removal of spilled soil plus removal of 3 inches of native soil. If a spill occurs in the paved area, brooms and shovels will be used to remove the soil.

Liquid generated at the site will be decontamination water, groundwater, and storm-water runoff. If a liquid spill occurs at the site, the liquid will be contained using absorbent material and/or a soil berm. The absorbent material or soil will be mixed with the liquid. This material will be removed and transported to the landfill for disposal.

Storm drain inlets in the vicinity of the site will be appropriately protected so that no spilled water enters the storm drain system. Storm drain inlet protection could include blocking of the inlet using sandbags and plastic.

#### **4.8.6 Utility Abandonment or Closure**

If necessary, on-site utilities will be abandoned at the property boundary. Abandonment of the utilities will be in accordance with the local codes. Appropriate permits will be obtained prior to abandonment.

## 5.0 SITE SAFETY

A site-specific Health and Safety Plan was prepared and previously submitted to the U.S. EPA. This safety plan was approved by the U.S. EPA on November 18, 1998. An amendment to this plan is included in **Appendix A**. The amended safety procedures presented in this plan and appendix will be adhered to during the implementation of the removal action.

## 6.0 PROJECT TEAM

The removal action will be implemented on behalf of MichCon by the following entities:

**IT Corporation: 14155 Farmington Road, Livonia, MI 48154**

- Air monitoring
- Collection of confirmation samples and shipment of samples to laboratory
- Compaction testing
- Documentation of site activities

**MPS Group Industrial & Environmental Services: 2920 Scotten Street, Detroit, MI 48210**

- Dewatering of tar tanks and excavation
- Excavation of overburden, impacted materials, concrete and debris
- Transportation of materials to landfill
- Transportation of water to disposal facility
- Truck maintenance and cleaning
- Procurement of required permits and plans

**Clayton Group Services: 22345 Roethel Drive, Novi, MI 48375**

- Laboratory for BTEX and PAHs analyses

**Centre Analytical Laboratories, Inc.: 3048 Research Drive, State College, PA 16801**

- Laboratory for total cyanide and available cyanide analyses

**Republic Services of Michigan, LLC: Carleton Farms Landfill, P.O. Box 634, New Boston, MI 48164**

- Type II landfill for non-hazardous materials

**Dynecol, Inc.: 6520 Georgia Street, Detroit, MI 48211**

- Disposal facility for water.

A project organization chart is presented as **Figure 7**.

## 7.0 IMPLEMENTATION SCHEDULE

The anticipated removal action implementation scheduled is presented on **Figure 8**. The duration of the project will be dependent on several factors such as the weather, availability of trucks for transportation, the production rate of excavation activities, and the amount of materials needed to be transported to the landfill for disposal.

## 8.0 REFERENCES

Agency for Toxic Substances and Disease Registry (ATSDR), 1993, Toxicological Profile for Cyanide.

ATSDR, 1995, Public Health Assessment for Waterloo Coal Gasification Plant.

City of Detroit, 1990, The Detroit Master Plan of Policies, Article 403, Zoning Definition.

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City of Detroit, 1998, Renaissance Zone Information Guide.

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IT Corporation, May 1999, Final Environmental Assessment to Support an Engineering Evaluation/Cost Analysis, May 7, 1999.

Michigan Department of Environmental Quality, 1999, Part 201 Soil Direct Contact Cleanup Criteria for Cyanide: Toxicological Assessment and Review of Analytical Methods.

Michigan Department of Environmental Quality, 2000, Part 201 Generic Cleanup Criteria and Screening Levels, June 7, 2000.

U.S. Environmental Protection Agency, 1995, Land Use in the CERCLA Remedy Selection Process. Office of Emergency and Remedial Response, Washington, DC. OSWER Directive 9355.7-04.

U.S. Environmental Protection Agency, 1998, Guidelines for Establishing Test Procedures for the Analysis of Pollutants; Available Cyanide, 63 Federal Register 36, 810, 36, 811.

## FIGURES



# DETROIT, MICH.-ONT

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AMS 4368 I SE-SERIES V862

SCALE IN FEET

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QUADRANGLE LOCATION



INTERNATIONAL  
TECHNOLOGY  
CORPORATION

23837 RESEARCH DRIVE  
FARMINGTON HILLS, MI 48335  
(248) 473-0720

REV NO

DRAWING DATE

FILE NO

05/02/00

TOPO-MCG.CDR

## SITE LOCATION MAP

CLIENT

MICHIGAN CONSOLIDATED GAS CO.

PM

DS

LOCATION

S. GREEN AVE. @ S. POST AVE.  
DETROIT, MICHIGAN

PE/RC

DESIGNED

DETAILED

PROJECT NO

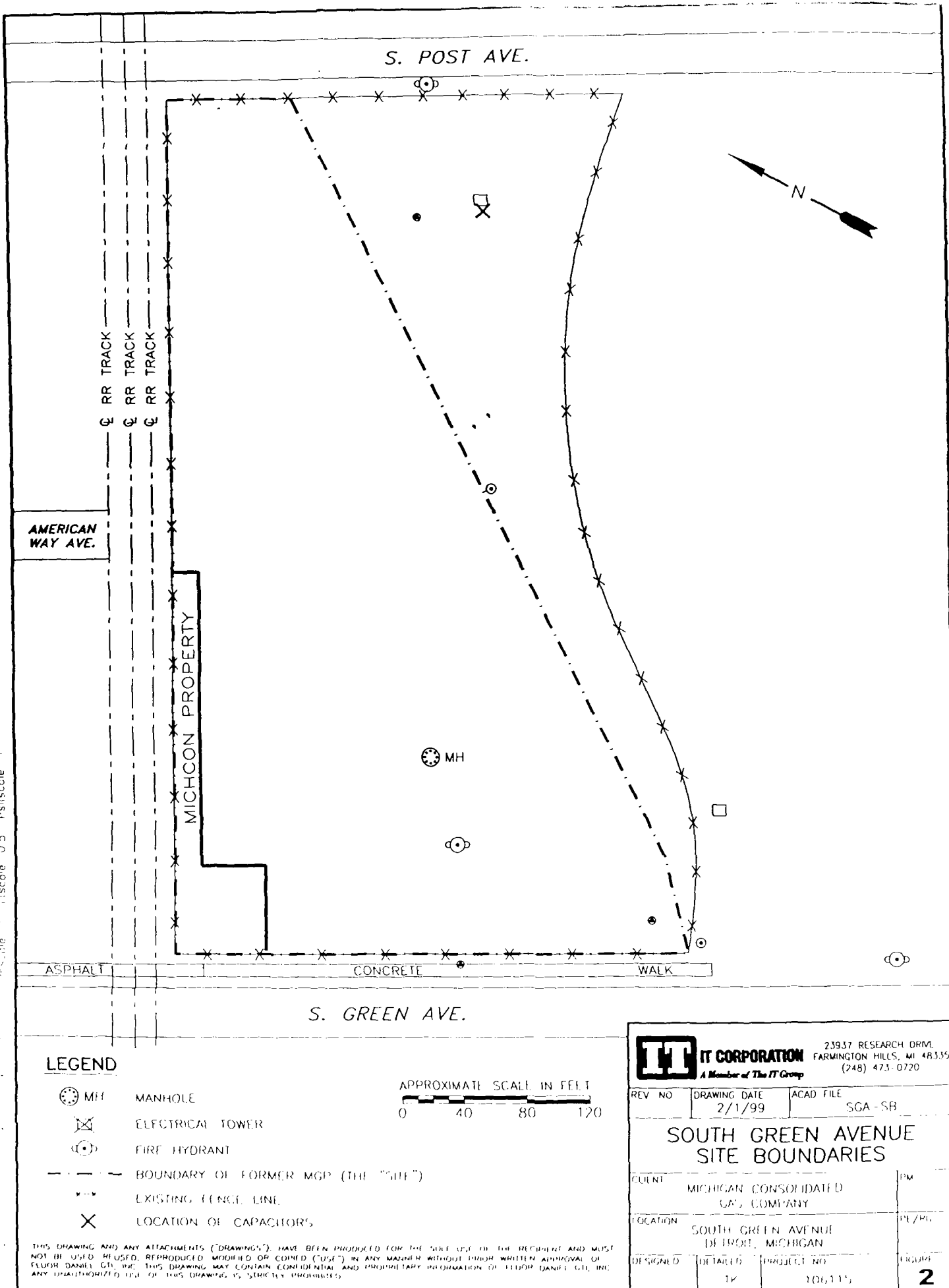
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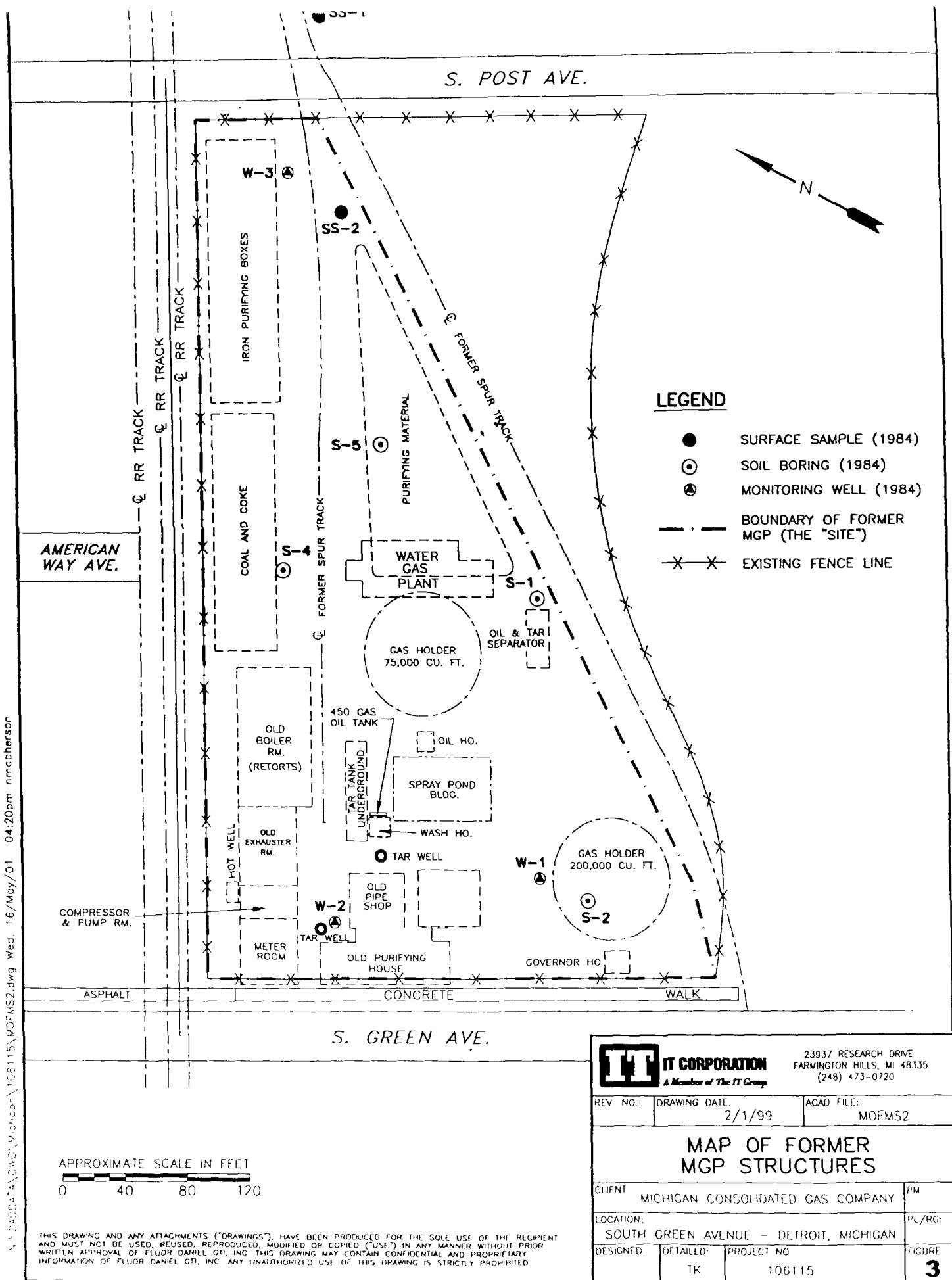
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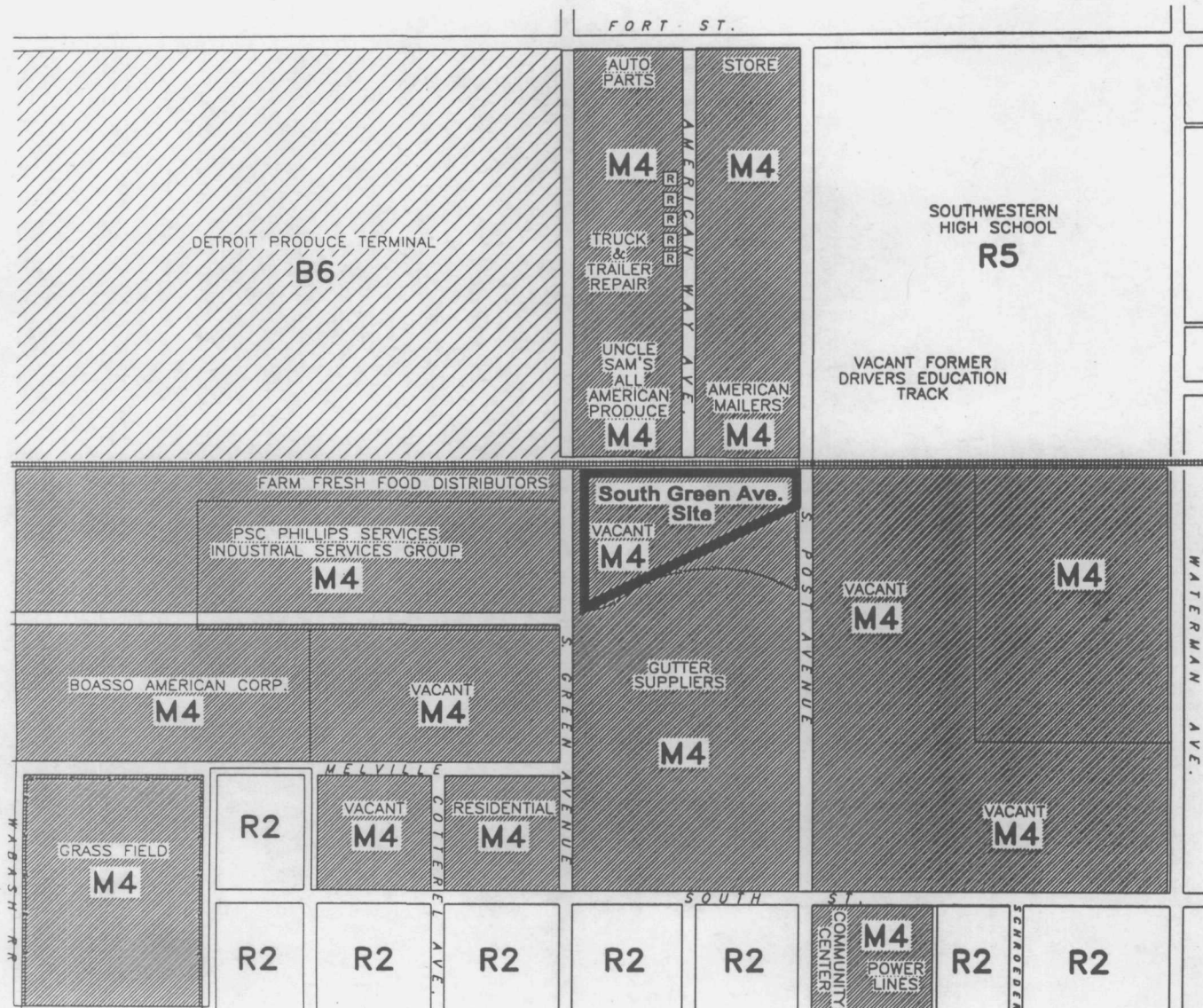
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### LEGEND

- RAILROAD TRACKS
- FENCE
- RESIDENTIAL STRUCTURE

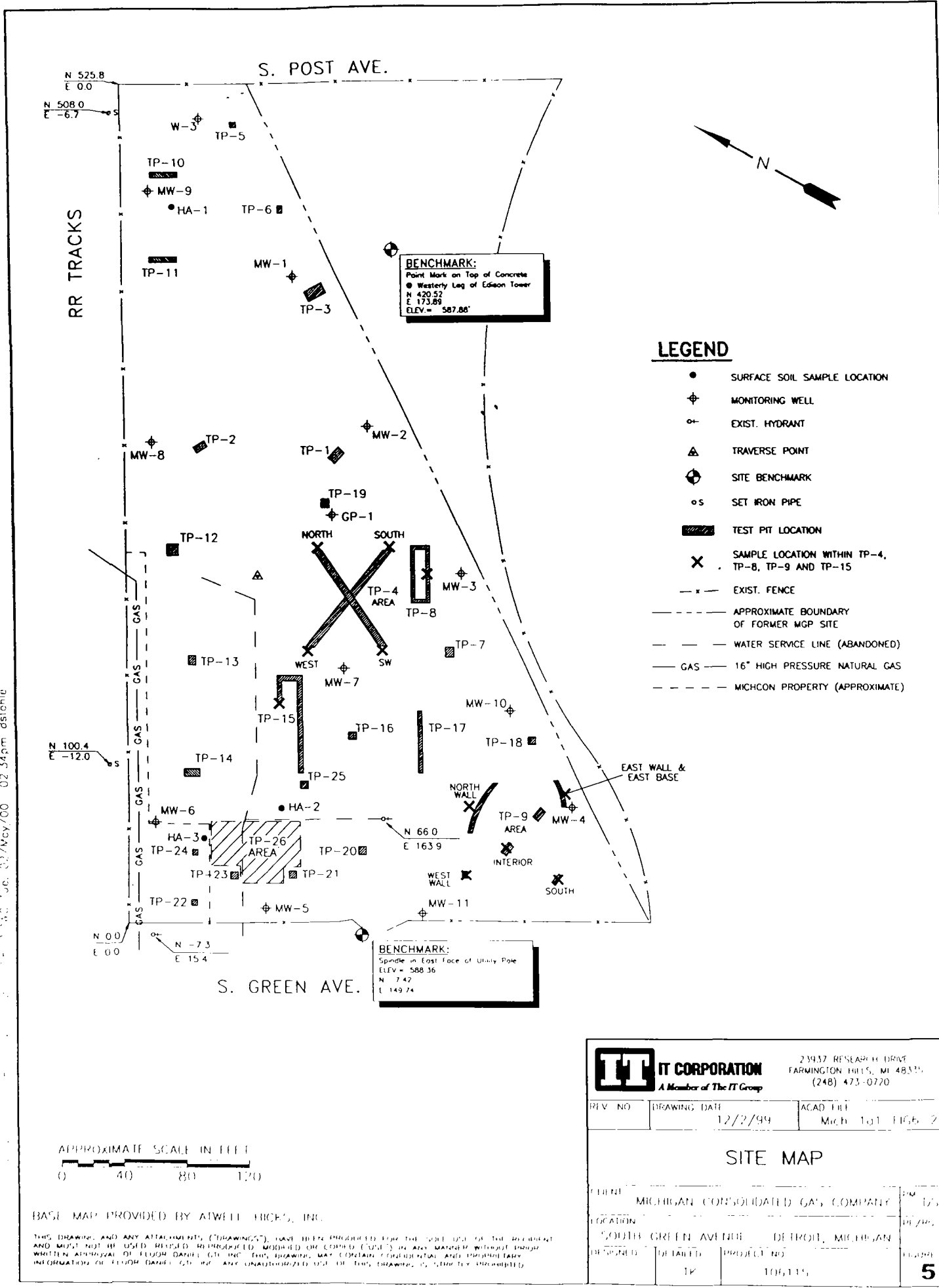
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- M4** INTENSIVE INDUSTRIAL
- B6** GENERAL SERVICES
- R2** 2 FAMILY RESIDENTIAL
- R5** MEDIUM DENSITY RESIDENTIAL

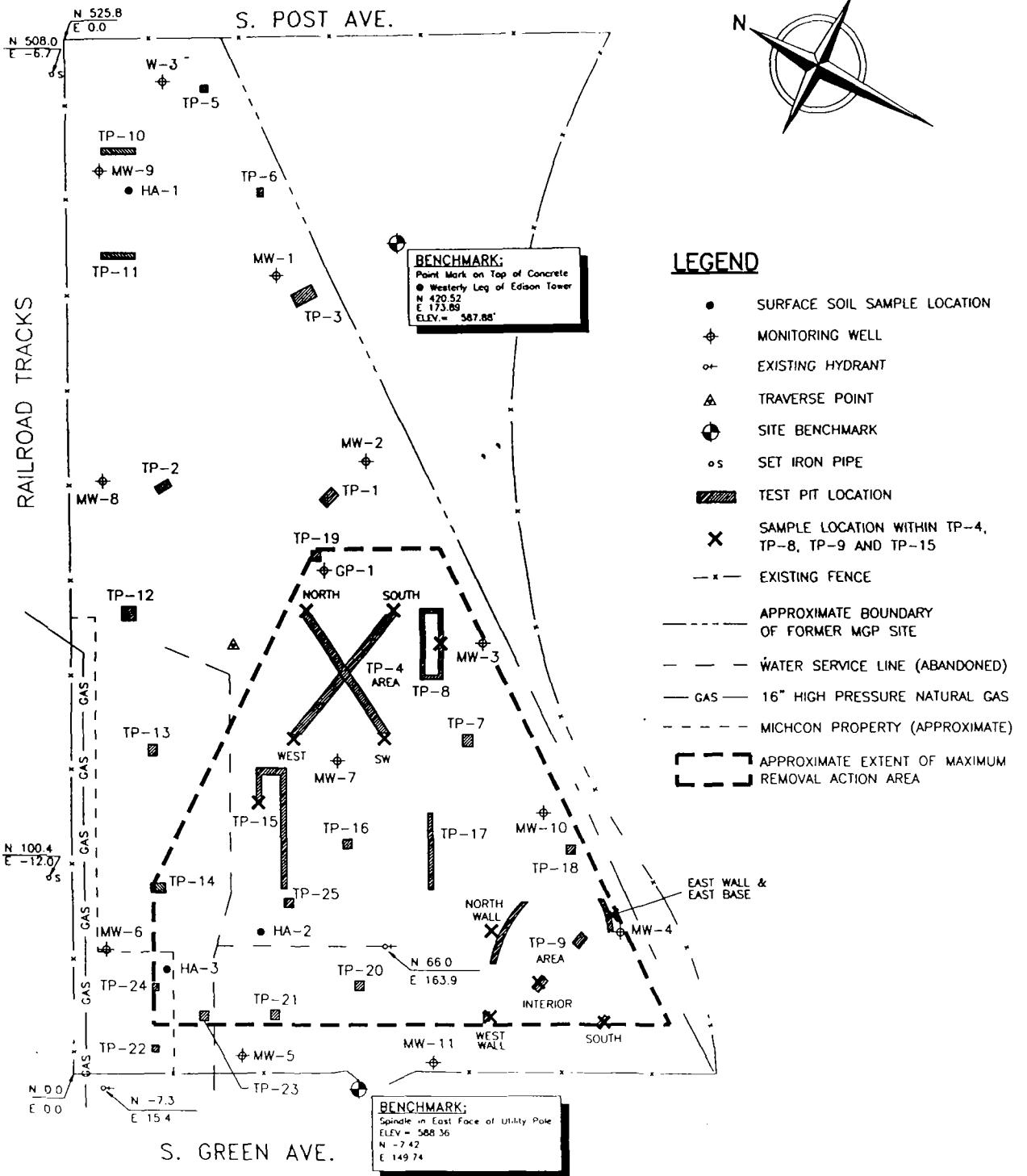
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<b>IT CORPORATION</b> A Member of The IT Group		23937 RESEARCH DRIVE FARMINGTON HILLS, MI 48331 (248) 473-0720	
REV. NO.:	DRAWING DATE:	ACAD FILE:	
	12/07/99	6115-2-X	
<b>ZONING AND SURROUNDING LAND USE MAP</b>			
CLIENT: MICHIGAN CONSOLIDATED GAS COMPANY			PM:
LOCATION: SOUTH GREEN AVENUE DETROIT, MICHIGAN			PE/RG:
DESIGNED: DS	DETAILED: TS	PROJECT NO.: 106115	FIGURE: <b>4</b>

SOURCE: IT CORP. FIELD PERSONNEL SKETCH



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BASE MAP PROVIDED BY ATWELL-HICKS, INC.



DATE 05/18/01  
 DWN DS  
 APP DS  
 REV DGS  
 PROJECT NO.  
 106115

**FIGURE 6**  
 MICHIGAN CONSOLIDATED GAS COMPANY  
 SOUTH GREEN AVENUE  
 DETROIT, MICHIGAN  
**MAP SHOWING APPROXIMATE MAXIMUM  
 EXTENT OF POTENTIAL REMOVAL ACTION**

**FIGURE 7**  
**PROJECT ORGANIZATION CHART**  
**EXCAVATION/OFF-SITE DISPOSAL REMOVAL ACTION**  
**SOUTH GREEN AVENUE SITE**  
**DETROIT, MICHIGAN**

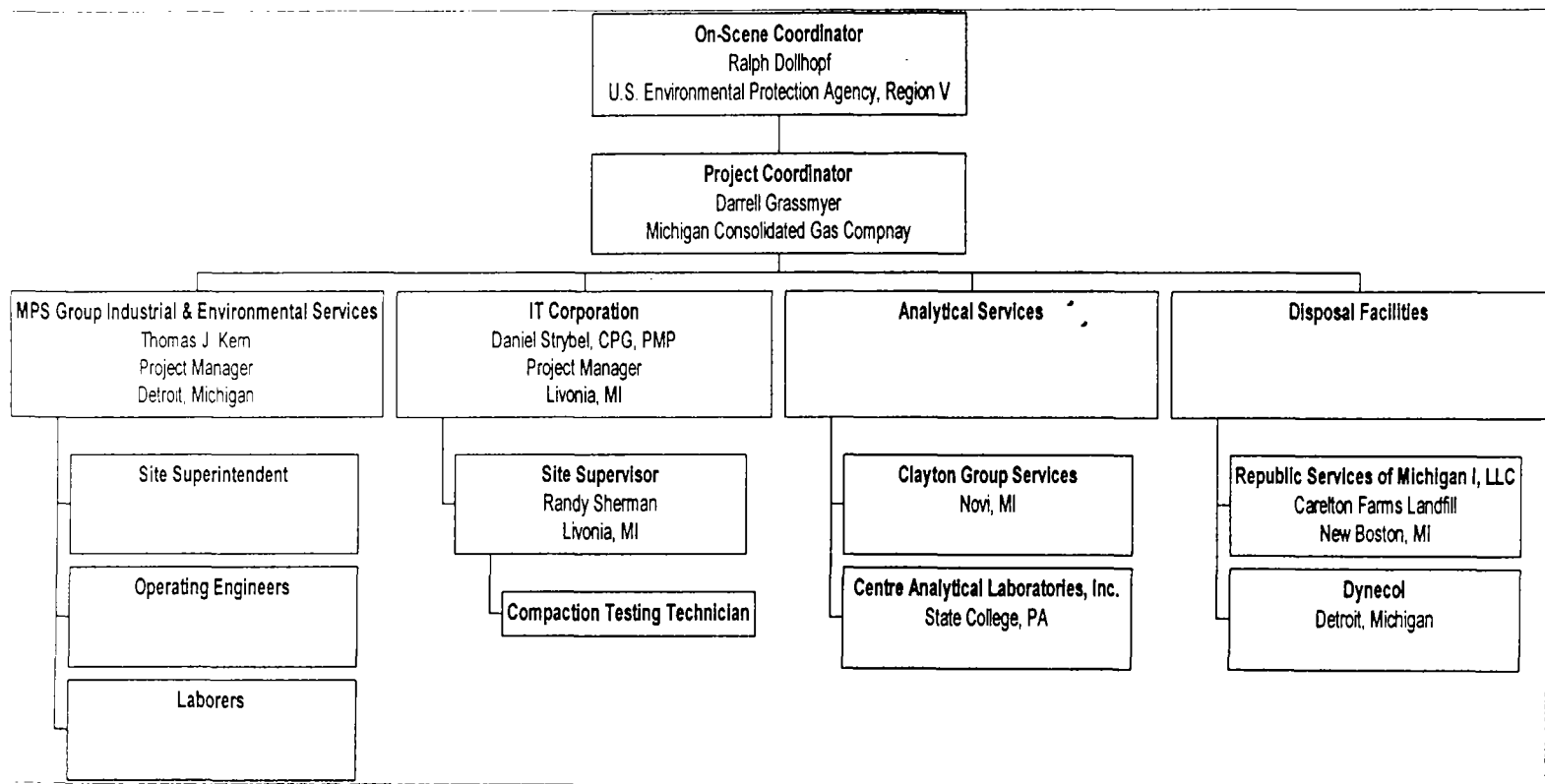
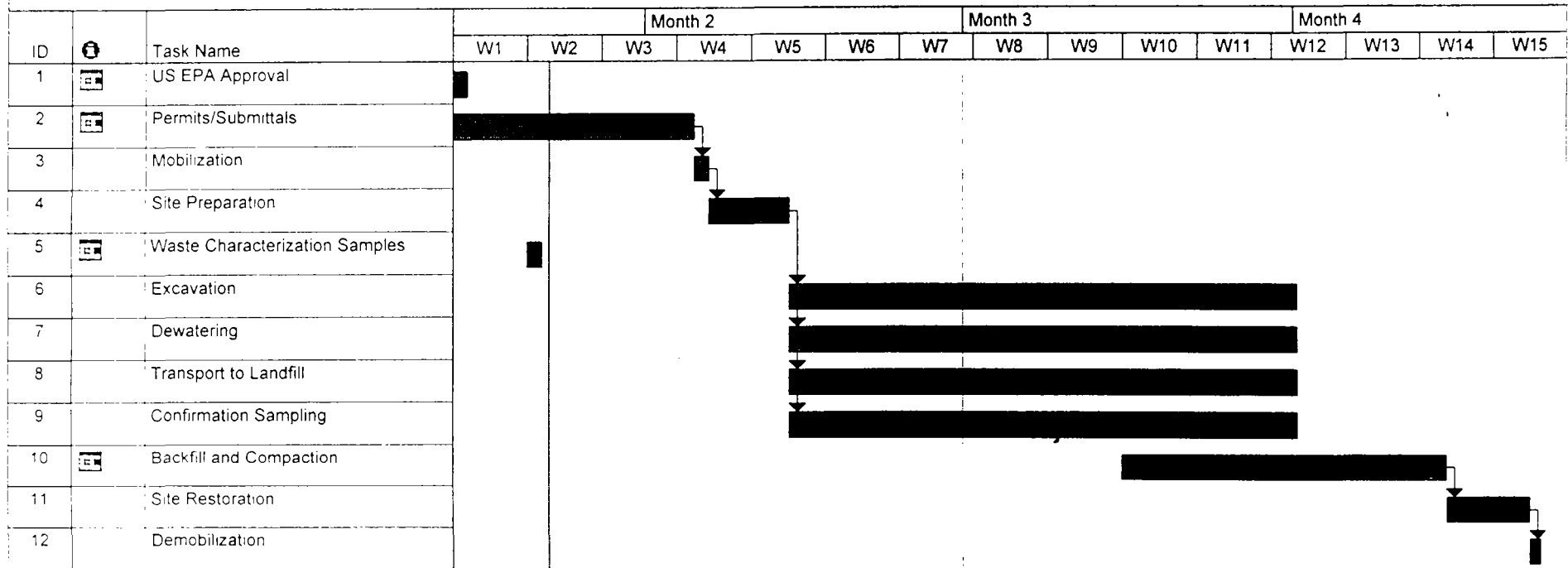


Figure 8  
Anticipated Project Timeline  
Excavation/Off Site Disposal Removal Action  
South Green Avenue Site  
Detroit, Michigan



Project Removal Action Date May 23, 2001	Task	■	Summary	■	Rolled Up Progress	■
	Split	■	Rolled Up Task	■	External Tasks	■
	Progress	■	Rolled Up Split	■	Project Summary	■
	Milestone	◆	Rolled Up Milestone	◇		

## TABLES

**TABLE 1**  
**SUMMARY OF SURFACE SOIL (1) ANALYTICAL DATA**  
**SOUTH GREEN AVENUE SITE**  
**DETROIT, MICHIGAN**

ANALYTE	MW-1 Surface 12/21/98 ug/Kg	MW-1 Dup Surface 12/21/98 ug/Kg	MW-2 Surface 12/21/98 ug/Kg	MW-3 Surface 12/21/98 ug/Kg	MW-4 Surface 12/21/98 ug/Kg	MW-5 (1-2)' 12/15/98 ug/Kg	MW-5 (Dup) (1-2)' 12/15/98 ug/Kg	MW-7 Surface 12/21/98 ug/Kg	MW-8 Surface 12/21/98 ug/Kg
<b>Volatile Organic Compounds</b>									
benzene	<10	<10	20	70	50	<10	<10	50	<10
ethylbenzene	<10	<10	<10	20	<10	<10	<10	30	<10
toluene	<10	<10	10	20	20	<10	<10	120	<10
xlenes	<30	<30	<30	90	50	<30	<30	270	<30
<b>Polynuclear Aromatic Hydrocarbons</b>									
acenaphthene	490	410	<330	<4,000	550	<330	<330	2,800	480
acenaphthylene	340	<330	550	15,000	2,200	<330	<330	20,000	980
anthracene	410	<330	590	18,000	2,600	<330	<330	23,000	2,300
benzo(a)anthracene	1,400	960	1,600	56,000	6,100	<330	<330	58,000	68,000
benzo(a)pyrene	1,500	1,100	2,100	34,000	7,600	<330	<330	59,000	86,000
benzo(b)fluoranthene	1,900	1,400	3,100	53,000	7,500	<330	<330	59,000	89,000
benzo(g,h,i) perylene	1,700	1,100	1,600	33,000	2,900	<330	<330	18,000	23,000
benzo(k)fluoranthene	2,000	1,200	2,800	61,000	8,300	340	<330	65,000	9,200
chrysene	1,700	1,200	2,200	65,000	6,300	<330	<330	59,000	8,700
dibenzo(a,h)anthracene	490	390	560	11,000	<330	<330	<330	57,000	960
fluoranthene	2,500	1,800	2,700	110,000	13,000	440	<330	95,000	16,000
fluorene	<330	<330	<330	5,300	580	<330	<330	8,100	660
indeno(1,2,3-cd)pyrene	1,500	990	1,600	33,000	3,000	<330	<330	20,000	27,000
2-methylnaphthalene	5,000	4,500	2,700	<4,000	3,100	<330	<330	8,500	1,100
naphthalene	2,400	2,100	1,800	5,700	3,000	<330	<330	13,000	1,200
phenanthrene	1,600	1,100	1,800	8,300	6,300	<330	<330	50,000	65,000
pyrene	2,000	1,500	2,100	110,000	9,600	440	<330	91,000	11,000
<b>Phthalates</b>									
bis(2-ethyl hexyl) phthalate	<330	<330	<330	<4,000	<330	<330	<330	2,900	<330
butyl benzyl phthalate	<330	<330	<330	<4,000	<330	<330	<330	<400	<330
di-n-butyl phthalate	<330	<330	<330	<4,000	<330	<330	<330	<400	<330
di-n-octylphthalate	<330	<330	<330	<4,000	<330	<330	<330	<400	<330
diethylphthalate	<330	<330	<330	<4,000	<330	<330	<330	<400	<330
dimethylphthalate	<330	<330	<330	<4,000	<330	<330	<330	<400	<330
<b>Inorganics</b>									
lead	590,000	350,000	1,200,000	200,000	550,000	13,000	14,000	210,000	490,000
total cyanide	13,000	15,000	33,000	93,000	12,000	1,300	1,000	29,000	28,000
weak-acid dissociable cyanide	1,900	1,500	13,000	69,000	2,500	<400	<400	4,400	10,000

NA = Not analyzed

(1) Less than 2 feet below the surface.

**TABLE 1**  
**SUMMARY OF SURFACE SOIL (1) ANALYTICAL DATA**  
**SOUTH GREEN AVENUE SITE**  
**DETROIT, MICHIGAN**

ANALYTE	MW-10 Surface 12/21/98 ug/Kg	MW-11 Surface 12/21/98 ug/Kg	HA-1 1/18/99 ug/Kg	HA-2 1/18/99 ug/Kg	HA-3 1/18/99 ug/Kg	TP-4 Surface 6/29/99 ug/Kg	TP-17 Surface 6/29/99 ug/Kg	TP-25 Surface 6/29/99 ug/Kg
<b>Volatile Organic Compounds</b>								
benzene	20	30	NA	NA	NA	30	50	30
ethylbenzene	<10	<10	NA	NA	NA	<10	<10	<10
toluene	10	<10	NA	NA	NA	<10	<10	<10
xylene	<30	<30	NA	NA	NA	200	<30	<30
<b>Polynuclear Aromatic Hydrocarbons</b>								
acenaphthene	400	630	<400	<2,000	<4,000	5,800	<1,900	<2,000
acenaphthylene	7,000	1,500	1,200	7,000	6,000	14,000	4,600	3,300
anthracene	500	1,800	1,900	6,000	7,000	15,000	7,900	3,500
benzo(a)anthracene	1,800	5,600	4,900	18,000	13,000	28,000	26,000	19,000
benzo(a)pyrene	1,900	7,700	5,400	21,000	13,000	27,000	21,000	22,000
benzo(b)fluoranthene	2,800	9,300	6,100	19,000	13,000	25,000	23,000	20,000
benzo(g,h,i) perylene	900	2,600	2,100	7,000	6,000	20,000	19,000	14,000
benzo(k)fluoranthene	3,000	9,200	6,100	22,000	14,000	28,000	25,000	20,000
chrysene	2,100	6,200	5,400	18,000	13,000	29,000	28,000	19,000
dibenzo(a,h)anthracene	<400	930	800	3,000	<4,000	6,000	4,400	4,300
fluoranthene	3,000	12,000	11,000	38,000	36,000	40,000	49,000	28,000
fluorene	<400	500	600	<2,000	<4,000	8,300	<1,900	<2,000
indeno(1,2,3-cd)pyrene	1,000	2,900	2,100	7,000	6,000	18,000	16,000	14,000
2-methylnaphthalene	500	2,200	600	4,000	6,000	5,600	<1,900	<2,000
naphthalene	700	1,500	1,300	4,000	31,000	11,000	<1,900	<2,000
phenanthrene	1,300	5,100	5,200	12,000	29,000	29,000	20,000	5,400
pyrene	2,400	7,900	7,400	32,000	26,000	47,000	46,000	26,000
<b>Phthalates</b>								
bis(2-ethyl hexyl) phthalate	<400	<330	7,100	<2,000	<400	NA	NA	NA
butyl benzyl phthalate	<400	<330	<400	<2,000	<400	NA	NA	NA
di-n-butyl phthalate	<400	<330	<400	<2,000	<400	NA	NA	NA
di-n-octylphthalate	<400	<330	<400	<2,000	<400	NA	NA	NA
diethylphthalate	<400	<330	<400	<2,000	<400	NA	NA	NA
dimethylphthalate	<400	<330	<400	<2,000	<400	NA	NA	NA
<b>Inorganics</b>								
lead	540,000	400,000	1,000,000	690,000	290,000	430,000	58,000	480,000
total cyanide	14,000	14,000	26,000	12,000	7,900	5,000	69,000	18,000
weak-acid dissociable cyanide	3,000	2,100	5,300	2,400	500	NA	NA	NA

NA = Not analyzed  
(1) Less than 2 feet below the surface

**TABLE 2**  
**SUMMARY OF SUBSURFACE SOIL (1) ANALYTICAL DATA**  
**SOUTH GREEN AVENUE SITE**  
**DETROIT, MICHIGAN**

ANALYTE	TP-1 (Base) 12/7/98 ug/Kg	TP-1 (8)' 12/10/98 ug/Kg	TP-2 (Source) 12/7/98 ug/Kg	TP-2 (Base) 12/7/98 ug/Kg	TP-3 (Base) CLAY 12/7/98 ug/Kg	TP-3 (Base B) 12/9/98 ug/Kg	TP-4 (SW-1) 12/7/98 ug/Kg	TP-4 (SW-2) CLAY 12/7/98 ug/Kg
<b>Volatile Organic Compounds</b>								
benzene	<10	<10	<10	<10	<10	170	250,000	20
ethylbenzene	<10	<10	<10	<10	<10	<10	70,000	10
toluene	<10	10	<10	<10	<10	20	430,000	50
xylene	<30	<30	<30	<30	<30	<30	540,000	40
<b>Polynuclear Aromatic Hydrocarbons</b>								
acenaphthene	<330	<330	<330	400	<330	<330	<1,300,000	<330
acenaphthylene	<330	<330	750	2,500	<330	<330	5,000,000	<330
anthracene	<330	330	540	3,000	<330	<330	3,800,000	<330
benzo(a)anthracene	<330	1,100	2,200	14,000	<330	<330	2,600,000	<330
benzo(a)pyrene	<330	910	2,300	15,000	<330	<330	2,100,000	<330
benzo(b)fluoranthene	<330	850	2,600	13,000	<330	<330	1,400,000	<330
benzo(g,h,i) perylene	<330	700	2,200	6,300	<330	<330	<1,300,000	<330
benzo(k)fluoranthene	<330	960	3,000	14,000	<330	<330	1,600,000	<330
chrysene	<330	1,000	2,900	14,000	<330	<330	2,300,000	<330
dibenzo(a,h)anthracene	<330	<330	730	2,100	<330	<330	<1,300,000	<330
fluoranthene	<330	2,200	2,900	22,000	<330	<330	6,500,000	350
fluorene	<330	<330	<330	600	<330	<330	3,700,000	<330
indeno(1,2,3-cd)pyrene	<330	670	2,200	12,000	<330	<330	<1,300,000	<330
2-methylnaphthalene	<330	<330	<330	<330	<330	<330	7,600,000	<330
naphthalene	<330	<330	570	620	<330	<330	27,000,000	2,600
phenanthrene	<330	1,100	1,400	6,700	<330	<330	12,000,000	<330
pyrene	<330	1,800	2,300	22,000	<330	<330	6,300,000	370
<b>Total Petroleum Hydrocarbons, Total Organic Carbon</b>								
Total Petroleum Hydrocarbons	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	NA	NA	NA	NA	NA	NA	NA	NA
<b>Phthalates</b>								
bis(2-ethyl hexyl) phthalate	NA	NA	NA	NA	NA	NA	NA	NA
butyl benzyl phthalate	NA	NA	NA	NA	NA	NA	NA	NA
di-n-butyl phthalate	NA	NA	NA	NA	NA	NA	NA	NA
di-n-octylphthalate	NA	NA	NA	NA	NA	NA	NA	NA
diethylphthalate	NA	NA	NA	NA	NA	NA	NA	NA
dimethylphthalate	NA	NA	NA	NA	NA	NA	NA	NA
<b>Inorganics</b>								
lead	NA	NA	NA	NA	NA	NA	NA	NA
total cyanide	500	4,800	61,000	67,000	24,000	3,300	37,000	68,000
weak-acid dissociable cyanide	NA	<300	NA	NA	NA	<400	NA	NA

NA = Not analyzed

(1) Greater than 2 feet below the surface.

**TABLE 2**  
**SUMMARY OF SUBSURFACE SOIL (1) ANALYTICAL DATA**  
**SOUTH GREEN AVENUE SITE**  
**DETROIT, MICHIGAN**

ANALYTE	TP-4 (South) CLAY 12/7/98 ug/Kg	TP-4 (North) CLAY 12/7/98 ug/Kg	TP-4 (West) CLAY 12/7/98 ug/Kg	TP-5 (Base) 12/7/98 ug/Kg	TP-6 (South Wall) 12/7/98 ug/Kg	TP-6 (Base) 12/7/98 ug/Kg	TP-7 (3') 12/7/98 ug/Kg	TP-7 (Base) 12/7/98 ug/Kg
<b>Volatile Organic Compounds</b>								
benzene	10	<10	<10	10	<10	10	<10	3,200
ethylbenzene	1,300	<10	<10	<10	<10	<10	<10	260
toluene	<10	<10	<10	20	<10	10	<10	40
xylene	100	<30	<30	<30	<30	<30	<30	300
<b>Polynuclear Aromatic Hydrocarbons</b>								
acenaphthene	20,000	<330	<330	<330	<330	<330	<370	<330
acenaphthylene	14,000	<330	<330	<330	<330	<330	5,500	<330
anthracene	17,000	<330	<330	<330	<330	<330	1,600	<330
benzo(a)anthracene	11,000	<330	<330	<330	<330	<330	580	<330
benzo(a)pyrene	6,200	<330	<330	<330	<330	<330	8,000	<330
benzo(b)fluoranthene	3,200	<330	<330	<330	<330	<330	19,000	<330
benzo(g,h,i) perylene	2,600	<330	<330	<330	<330	<330	8,800	<330
benzo(k)fluoranthene	3,600	<330	<330	<330	<330	<330	6,400	<330
chrysene	11,000	<330	<330	<330	<330	<330	6,400	<330
dibenzo(a,h)anthracene	840	<330	<330	<330	<330	<330	3,000	<330
fluoranthene	19,000	<330	<330	<330	<330	<330	<370	<330
fluorene	22,000	<330	<330	<330	<330	<330	<370	<330
indeno(1,2,3-cd)pyrene	2,400	<330	<330	<330	<330	<330	8,900	<330
2-methylnaphthalene	430	<330	<330	<330	<330	<330	<330	<330
naphthalene	1,400	<330	<330	<330	<330	<330	<370	2,700
phenanthrene	50,000	<330	<330	<330	<330	<330	<370	<330
pyrene	26,000	<330	<330	<330	<330	<330	1,400	<330
<b>Total Petroleum Hydrocarbons, Total Organic Carbon</b>								
Total Petroleum Hydrocarbons	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	NA	NA	NA	NA	NA	NA	NA	NA
<b>Phthalates</b>								
bis(2-ethyl hexyl) phthalate	NA	NA	NA	NA	NA	NA	NA	NA
butyl benzyl phthalate	NA	NA	NA	NA	NA	NA	NA	NA
di-n-butyl phthalate	NA	NA	NA	NA	NA	NA	NA	NA
di-n-octylphthalate	NA	NA	NA	NA	NA	NA	NA	NA
diethylphthalate	NA	NA	NA	NA	NA	NA	NA	NA
dimethylphthalate	NA	NA	NA	NA	NA	NA	NA	NA
<b>Inorganics</b>								
lead	NA	NA	NA	NA	NA	NA	NA	NA
total cyanide	4,700	900	2,300	4,700	76,000	1,400	3,900	60,000
weak-acid dissociable cyanide	NA	NA	NA	NA	NA	NA	NA	NA

NA = Not analyzed

(1) Greater than 2 feet below the surface.

**TABLE 2**  
**SUMMARY OF SUBSURFACE SOIL (1) ANALYTICAL DATA**  
**SOUTH GREEN AVENUE SITE**  
**DETROIT, MICHIGAN**

ANALYTE	TP-8 (South Wall) 12/8/98 ug/Kg	TP-8 (Base) CLAY 12/8/98 ug/Kg	TP-9 (South) 12/8/98 ug/Kg	TP-9 (East Wall) 12/8/98 ug/Kg	TP-9 (East Base) CLAY 12/8/98 ug/Kg	TP-9 (North Wall) 12/8/98 ug/Kg	P-9 (North Base) CLAY 12/8/98 ug/Kg	TP-9 (Dup) (North Base) 12/8/98 ug/Kg
<b>Volatile Organic Compounds</b>								
benzene	800	40	50	<10	20	<10	<600	100
ethylbenzene	1,800	<10	<10	<10	<10	<10	7,700	10
toluene	1,300	20	20	<10	20	<10	<600	20
xlenes	10,000	<30	<30	<30	<30	<30	<1000	<30
<b>Polynuclear Aromatic Hydrocarbons</b>								
acenaphthene	4,400	<330	<330	<330	930	<330	6,100	5,600
acenaphthylene	4,800	<330	<330	<330	490	<330	<330	<330
anthracene	3,800	<330	<330	<330	<330	<330	<330	<330
benzo(a)anthracene	4,500	<330	<330	<330	<330	<330	<330	<330
benzo(a)pyrene	3,700	<330	<330	<330	<330	<330	<330	<330
benzo(b)fluoranthene	2,600	<330	<330	<330	<330	<330	<330	<330
benzo(g,h,i) perylene	2,300	<330	<330	<330	<330	<330	<330	<330
benzo(k)fluoranthene	3,300	<330	<330	<330	<330	<330	<330	<330
chrysene	4,400	<330	<330	<330	<330	<330	<330	<330
dibenzo(a,h)anthracene	6,500	<330	<330	<330	<330	<330	<330	<330
fluoranthene	9,100	<330	<330	<330	<330	<330	<330	<330
fluorene	6,300	<330	<330	<330	<330	<330	1,800	1,200
indeno(1,2,3-cd)pyrene	2,000	<330	<330	<330	<330	<330	<330	<330
2-methylnaphthalene	8,700	<330	<330	<330	<330	<330	<330	<330
naphthalene	43,000	<330	<330	<330	<330	<330	480	520
phenanthrene	17,000	<330	<330	<330	<330	<330	1,600	860
pyrene	12,000	<330	<330	<330	<330	<330	<330	<330
<b>Total Petroleum Hydrocarbons, Total Organic Carbon</b>								
Total Petroleum Hydrocarbons	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	NA	NA	NA	NA	NA	NA	NA	NA
<b>Phthalates</b>								
bis(2-ethyl hexyl) phthalate	NA	NA	NA	NA	NA	NA	NA	NA
butyl benzyl phthalate	NA	NA	NA	NA	NA	NA	NA	NA
di-n-butyl phthalate	NA	NA	NA	NA	NA	NA	NA	NA
di-n-octylphthalate	NA	NA	NA	NA	NA	NA	NA	NA
diethylphthalate	NA	NA	NA	NA	NA	NA	NA	NA
dimethylphthalate	NA	NA	NA	NA	NA	NA	NA	NA
<b>Inorganics</b>								
lead	NA	NA	NA	NA	NA	NA	NA	NA
total cyanide	61,000	2,300	600	1,900	500	18,000	4,300	3,000
weak-acid dissociable cyanide	1,200	<400	<300	<300	<400	<300	<400	<300

NA = Not analyzed

(1) Greater than 2 feet below the surface.

**TABLE 2**  
**SUMMARY OF SUBSURFACE SOIL (1) ANALYTICAL DATA**  
**SOUTH GREEN AVENUE SITE**  
**DETROIT, MICHIGAN**

ANALYTE	TP-9 (Interior) 12/8/98 ug/Kg	TP-9 (West Wall) 12/9/98 ug/Kg	TP-10 (Base) CLAY 12/9/98 ug/Kg	TP-11 (Base) CLAY 12/9/98 ug/Kg	TP-12 (Base) CLAY 12/9/98 ug/Kg	TP-13 (Base) CLAY 12/9/98 ug/Kg	TP-13 (5)' 12/9/98 ug/Kg	TP-14 (Base) CLAY 12/9/98 ug/Kg
<b>Volatile Organic Compounds</b>								
benzene	720,000	<100	10	10	20	20	<10	<10
ethylbenzene	240,000	<100	<10	<10	<10	10	<10	<10
toluene	810,000	<100	20	30	20	30	<10	<10
xylene	600,000	<300	<30	<30	<30	60	<30	<30
<b>Polynuclear Aromatic Hydrocarbons</b>								
acenaphthene	2,700,000	4,000	<330	<330	<330	<330	<330	<330
acenaphthylene	6,100,000	<780	<330	<330	<330	<330	<330	<330
anthracene	3,900,000	2,900	<330	<330	<330	<330	<330	<330
benzo(a)anthracene	2,500,000	2,400	<330	<330	<330	<330	<330	<330
benzo(a)pyrene	2,400,000	1,200	<330	<330	<330	<330	<330	<330
benzo(b)fluoranthene	1,400,000	1,100	<330	<330	<330	<330	<330	<330
benzo(g,h,i) perylene	1,200,000	<780	<330	<330	<330	<330	<330	<330
benzo(k)fluoranthene	1,800,000	1,200	<330	<330	<330	<330	<330	<330
chrysene	2,300,000	2,600	<330	<330	<330	<330	<330	<330
dibenzo(a,h)anthracene	310,000	<780	<330	<330	<330	<330	<330	<330
fluoranthene	6,100,000	7,100	<330	<330	<330	<330	<330	560
fluorene	4,300,000	4,000	<330	<330	<330	<330	<330	<330
indeno(1,2,3-cd)pyrene	1,100,000	<780	<330	<330	<330	<330	<330	<330
2-methylnaphthalene	12,000,000	<780	<330	<330	<330	<330	<330	<330
naphthalene	43,000,000	<780	<330	<330	<330	<330	<330	<330
phenanthrene	13,000,000	9,400	<330	<330	<330	<330	<330	<330
pyrene	6,500,000	6,200	<330	<330	<330	<330	<330	640
<b>Total Petroleum Hydrocarbons, Total Organic Carbon</b>								
Total Petroleum Hydrocarbons	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	NA	NA	NA	NA	NA	NA	NA	NA
<b>Phthalates</b>								
bis(2-ethyl hexyl) phthalate	NA	NA	NA	NA	NA	NA	NA	NA
butyl benzyl phthalate	NA	NA	NA	NA	NA	NA	NA	NA
di-n-butyl phthalate	NA	NA	NA	NA	NA	NA	NA	NA
di-n-octylphthalate	NA	NA	NA	NA	NA	NA	NA	NA
diethylphthalate	NA	NA	NA	NA	NA	NA	NA	NA
dimethylphthalate	NA	NA	NA	NA	NA	NA	NA	NA
<b>Inorganics</b>								
lead	NA	NA	NA	NA	NA	NA	NA	NA
total cyanide	340,000	<300	1,300	2,800	1,000	1,500	<400	12,000
weak-acid dissociable cyanide	26,000	<300	<400	<400	<400	1,000	<400	<300

NA = Not analyzed

(1) Greater than 2 feet below the surface.

**TABLE 2**  
**SUMMARY OF SUBSURFACE SOIL (1) ANALYTICAL DATA**  
**SOUTH GREEN AVENUE SITE**  
**DETROIT, MICHIGAN**

ANALYTE	TP-14 (6)' 12/9/98 ug/Kg	TP-15 (5)' 12/10/98 ug/Kg	TP-15 (8)' 12/10/98 ug/Kg	TP-18 (3)' 12/11/98 ug/Kg	TP-18 (9)' CLAY 12/10/98 ug/Kg	TP-21 (7)' 12/10/98 ug/Kg	TP-23 (7)' 12/11/98 ug/Kg	TP-24 (8)' 12/11/98 ug/Kg
<b>Volatile Organic Compounds</b>								
benzene	40	40	<100	<10	390	<100	32,000	<10
ethylbenzene	<10	<10	<100	<10	20	<100	16,000	<10
toluene	10	<10	<100	<10	20	<100	35,000	20
xylene	<30	<30	<300	<30	40	<300	270,000	<30
<b>Polynuclear Aromatic Hydrocarbons</b>								
acenaphthene	<5600	<330	1,100	<14,000	2,200	<330	24,000	<330
acenaphthylene	6,200	440	400	91,000	<330	<330	92,000	<330
anthracene	<5600	330	450	110,000	<330	<330	140,000	<330
benzo(a)anthracene	26,000	1,500	610	840,000	<330	<330	210,000	<330
benzo(a)pyrene	37,000	2,200	780	430,000	<330	<330	210,000	<330
benzo(b)fluoranthene	30,000	1,700	530	760,000	<330	<330	160,000	<330
benzo(g,h,i) perylene	37,000	2,200	540	690,000	<330	<330	180,000	<330
benzo(k)fluoranthene	38,000	1,700	640	750,000	<330	<330	1600,00	<330
chrysene	27,000	1,500	590	890,000	<330	<330	180,000	<330
dibenzo(a,h)anthracene	8,900	490	<330	150,000	<330	<330	38,000	<330
fluoranthene	22,000	2,300	1,200	1,200,000	<330	440	590,000	<330
fluorene	<5600	<330	480	<14,000	340	<330	75,000	<330
indeno(1,2,3-cd)pyrene	32,000	1,800	500	630,000	<330	<330	150,000	<330
2-methylnaphthalene	<5600	<330	<330	<14,000	<330	<330	35,000	<330
naphthalene	<5600	810	<330	30,000	<330	5,300	100,000	<330
phenanthrene	<5600	880	870	310,000	<330	450	410,000	<330
pyrene	34,000	2,100	1,200	1,100,000	<330	410	480,000	<330
<b>Total Petroleum Hydrocarbons, Total Organic Carbon</b>								
Total Petroleum Hydrocarbons	NA	NA	NA	14,000,000	NA	NA	NA	NA
Total Organic Carbon	NA	NA	NA	NA	NA	NA	NA	NA
<b>Phthalates</b>								
bis(2-ethyl hexyl) phthalate	NA	NA	NA	NA	NA	NA	NA	NA
butyl benzyl phthalate	NA	NA	NA	NA	NA	NA	NA	NA
di-n-butyl phthalate	NA	NA	NA	NA	NA	NA	NA	NA
di-n-octylphthalate	NA	NA	NA	NA	NA	NA	NA	NA
diethylphthalate	NA	NA	NA	NA	NA	NA	NA	NA
dimethylphthalate	NA	NA	NA	NA	NA	NA	NA	NA
<b>Inorganics</b>								
lead	NA	NA	NA	230,000	NA	NA	NA	NA
total cyanide	2,300	14,000	1,000	4,000,000	1,300	3,700	71,000	7,400
weak-acid dissociable cyanide	<300	700	<300	450,000	<400	<300	5,300	<300

NA = Not analyzed

(1) Greater than 2 feet below the surface.

**TABLE 2**  
**SUMMARY OF SUBSURFACE SOIL (1) ANALYTICAL DATA**  
**SOUTH GREEN AVENUE SITE**  
**DETROIT, MICHIGAN**

ANALYTE	TP-24 (Dup) (8)' 12/11/98 ug/Kg	MW-1 (5-7)' 12/16/98 ug/Kg	MW-1 (13-15)' CLAY 12/16/98 ug/Kg	MW-2 (5-7)' 12/16/98 ug/Kg	MW-2 (13-15)' CLAY 12/16/98 ug/Kg	MW-3 (6-7)' 12/16/98 ug/Kg	MW-3 (10-12)' 12/16/98 ug/Kg	MW-4 (6-9)' 12/14/98 ug/Kg
<b>Volatile Organic Compounds</b>								
benzene	<10	<10	<10	<10	<10	<10	120	<10
ethylbenzene	<10	<10	<10	<10	<10	20	10	<10
toluene	10	20	<10	<10	10	<10	20	20
xylene	<30	<30	<30	<30	<30	60	50	<30
<b>Polynuclear Aromatic Hydrocarbons</b>								
acenaphthene	<330	<330	<330	<330	<330	660	<330	420
acenaphthylene	<330	<330	<330	<330	<330	410	<330	<330
anthracene	<330	<330	<330	<330	<330	350	<330	2,200
benzo(a)anthracene	<330	<330	<330	<330	<330	690	<330	<330
benzo(a)pyrene	<330	<330	<330	<330	<330	620	<330	<330
benzo(b)fluoranthene	<330	<330	<330	<330	<330	430	<330	<330
benzo(g,h,i) perylene	<330	<330	<330	<330	<330	330	<330	<330
benzo(k)fluoranthene	<330	<330	<330	<330	<330	560	<330	<330
chrysene	<330	<330	<330	<330	<330	660	<330	<330
dibenzo(a,h)anthracene	<330	<330	<330	<330	<330	<330	<330	<330
fluoranthene	<330	<330	<330	<330	<330	1,000	<330	940
fluorene	<330	<330	<330	<330	<330	910	<330	620
indeno(1,2,3-cd)pyrene	<330	<330	<330	<330	<330	<330	<330	<330
2-methylnaphthalene	<330	<330	<330	<330	<330	3,100	3,100	<330
naphthalene	<330	<330	<330	<330	<330	13,000	<330	<330
phenanthrene	<330	<330	<330	<330	<330	2,600	<330	2,000
pyrene	<330	<330	<330	<330	<330	1,200	<330	1,200
<b>Total Petroleum Hydrocarbons, Total Organic Carbon</b>								
Total Petroleum Hydrocarbons	NA	NA	NA	NA	NA	510,000	40,000	9,000
Total Organic Carbon	NA	NA	NA	NA	NA	NA	NA	NA
<b>Phthalates</b>								
bis(2-ethyl hexyl) phthalate	NA	<330	<330	<330	<330	<330	<330	<330
butyl benzyl phthalate	NA	<330	<330	<330	<330	<330	<330	<330
di-n-butyl phthalate	NA	<330	<330	<330	<330	<330	<330	<330
di-n-octylphthalate	NA	<330	<330	<330	<330	<330	<330	<330
diethylphthalate	NA	<330	<330	<330	<330	<330	<330	<330
dimethylphthalate	NA	<330	<330	<330	<330	<330	<330	<330
<b>Inorganics</b>								
lead	NA	4,000	13,000	4,000	13,000	1,000	15,000	<1000
total cyanide	16,000	1,600	2,500	1,400	4,200	6,800	2,400	1,800
weak-acid dissociable cyanide	<300	400	400	400	500	<300	<400	400

NA = Not analyzed

(1) Greater than 2 feet below the surface.

**TABLE 2**  
**SUMMARY OF SUBSURFACE SOIL (1) ANALYTICAL DATA**  
**SOUTH GREEN AVENUE SITE**  
**DETROIT, MICHIGAN**

ANALYTE	MW-4 (27-30)' CLAY 12/15/98 ug/Kg	MW-5 (5-7)' 12/15/98 ug/Kg	MW-5 (12-15)' CLAY 12/15/98 ug/Kg	MW-6 (6-8)' 12/15/98 ug/Kg	MW-6 (12-15)' CLAY 12/15/98 ug/Kg	MW-7 (5-7)' 12/16/98 ug/Kg	MW-7 (13-15)' CLAY 12/16/98 ug/Kg	MW-8 (5-7)' 12/15/98 ug/Kg
<b>Volatile Organic Compounds</b>								
benzene	<10	<10	<10	<10	<10	10	<10	<10
ethylbenzene	<10	<10	<10	<10	<10	<10	<10	<10
toluene	<10	10	10	<10	10	20	10	<10
xylene	<30	<30	40	<30	<30	<30	<30	<30
<b>Polynuclear Aromatic Hydrocarbons</b>								
acenaphthene	<330	<330	<330	<330	<330	430	<330	<330
acenaphthylene	<330	<330	<330	390	<330	900	<330	<330
anthracene	<330	<330	<330	<330	<330	720	<330	<330
benzo(a)anthracene	<330	<330	<330	1,200	<330	740	<330	<330
benzo(a)pyrene	<330	<330	<330	1,500	<330	1,500	<330	<330
benzo(b)fluoranthene	<330	<330	<330	1,100	<330	710	<330	<330
benzo(g,h,i) perylene	<330	<330	<330	980	<330	1,800	<330	<330
benzo(k)fluoranthene	<330	<330	<330	1,300	<330	820	<330	<330
chrysene	<330	<330	<330	1,100	<330	750	<330	<330
dibenzo(a,h)anthracene	<330	<330	<330	<330	<330	<330	<330	<330
fluoranthene	<330	<330	<330	2,500	<330	1,100	<330	<330
fluorene	<330	<330	<330	<330	<330	330	<330	<330
indeno(1,2,3-cd)pyrene	<330	<330	<330	860	<330	860	<330	<330
2-methylnaphthalene	<330	<330	<330	<330	<330	<330	<330	<330
naphthalene	<330	<330	<330	<330	<330	<330	<330	<330
phenanthrene	<330	<330	<330	810	<330	1,400	<330	<330
pyrene	<330	<330	<330	2,100	<330	1,900	<330	<330
<b>Total Petroleum Hydrocarbons, Total Organic Carbon</b>								
Total Petroleum Hydrocarbons	8,000	260,000	NA	24,000	17,000	260,000	NA	NA
Total Organic Carbon	NA	NA	NA	810,000	NA	56,000	NA	NA
<b>Phthalates</b>								
bis(2-ethyl hexyl) phthalate	<330	<330	<330	<330	<330	<330	<330	<330
butyl benzyl phthalate	<330	<330	<330	<330	<330	<330	<330	<330
di-n-butyl phthalate	<330	<330	<330	<330	<330	<330	<330	<330
di-n-octylphthalate	<330	<330	<330	<330	<330	<330	<330	<330
diethylphthalate	<330	<330	<330	<330	<330	<330	<330	<330
dimethylphthalate	<330	<330	<330	<330	<330	<330	<330	<330
<b>Inorganics</b>								
lead	10,000	8,000	13,000	5,000	14,000	16,000	12,000	2,000
total cyanide	<400	500	2,200	15,000	1,100	27,000	2,600	1,800
weak-acid dissociable cyanide	<400	<300	<400	<300	<400	500	<400	<300

NA = Not analyzed

(1) Greater than 2 feet below the surface.

**TABLE 2**  
**SUMMARY OF SUBSURFACE SOIL (1) ANALYTICAL DATA**  
**SOUTH GREEN AVENUE SITE**  
**DETROIT, MICHIGAN**

ANALYTE	MW-8 (12-15)' CLAY 12/15/98 ug/Kg	MW-9 (5-7)' 12/14/98 ug/Kg	MW-9 (28-30)' CLAY 12/14/98 ug/Kg	MW-10 (6-9)' 12/15/98 ug/Kg	MW-10 (12-15)' CLAY 12/15/98 ug/Kg	MW-11 (5-7)' 12/16/98 ug/Kg	MW-11 (Dup) (5-7)' 12/16/98 ug/Kg	MW-11 (13-15)' CLAY 12/16/98 ug/Kg
<b>Volatile Organic Compounds</b>								
benzene	<10	<10	<10	<10	<10	<10	<10	<10
ethylbenzene	<10	<10	<10	<10	<10	10	<10	<10
toluene	10	10	<10	<10	<10	10	10	10
xylene	<30	<30	<30	<30	<30	50	<30	<30
<b>Polynuclear Aromatic Hydrocarbons</b>								
acenaphthene	<330	<330	<330	<330	<330	870	760	<330
acenaphthylene	<330	<330	<330	<330	<330	<330	<330	<330
anthracene	<330	<330	<330	<330	<330	<330	<330	<330
benzo(a)anthracene	<330	<330	<330	<330	<330	<330	<330	<330
benzo(a)pyrene	<330	<330	<330	<330	<330	<330	<330	<330
benzo(b)fluoranthene	<330	<330	<330	<330	<330	<330	<330	<330
benzo(g,h,i) perylene	<330	<330	<330	<330	<330	<330	<330	<330
benzo(k)fluoranthene	<330	<330	<330	<330	<330	<330	<330	<330
chrysene	<330	<330	<330	<330	<330	<330	<330	<330
dibenzo(a,h)anthracene	<330	<330	<330	<330	<330	<330	<330	<330
fluoranthene	<330	<330	<330	<330	<330	<330	<330	<330
fluorene	<330	<330	<330	<330	<330	<330	<330	<330
indeno(1,2,3-cd)pyrene	<330	<330	<330	<330	<330	<330	<330	<330
2-methylnaphthalene	<330	<330	<330	<330	<330	<330	<330	<330
naphthalene	<330	<330	<330	<330	<330	<330	<330	<330
phenanthrene	<330	<330	<330	<330	<330	<330	<330	<330
pyrene	<330	<330	<330	<330	<330	<330	<330	<330
<b>Total Petroleum Hydrocarbons, Total Organic Carbon</b>								
Total Petroleum Hydrocarbons	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	NA	NA	NA	NA	NA	NA	NA	NA
<b>Phthalates</b>								
bis(2-ethyl hexyl) phthalate	<330	<330	<330	<330	<330	<330	<330	<330
butyl benzyl phthalate	<330	<330	<330	<330	<330	<330	<330	<330
di-n-butyl phthalate	<330	<330	<330	<330	<330	<330	<330	<330
di-n-octylphthalate	<330	<330	<330	<330	<330	<330	<330	<330
diethylphthalate	<330	<330	<330	<330	<330	<330	<330	<330
dimethylphthalate	<330	<330	<330	<330	<330	<330	<330	<330
<b>Inorganics</b>								
lead	13,000	5,000	<1,000	12,000	10,000	1,000	2,000	12,000
total cyanide	2,000	1,200	<400	40,000	2,300	16,000	15,000	3,000
weak-acid dissociable cyanide	<400	<400	<400	<300	1,300	300	<300	<400

NA = Not analyzed

(1) Greater than 2 feet below the surface.

TABLE 3  
COMPARISON OF EXPOSURE POINT CONCENTRATIONS IN SOIL TO INDUSTRIAL GENERIC CLEANUP CRITERIA  
SOUTH GREEN AVENUE SITE  
DETROIT, MICHIGAN

ANALYTE	All values in ug/Kg Generic Cleanup Criteria (1)					Exposure Point Concentrations	
	GCC Protection	Industrial/ Commercial II, III and IV SVIIC	Industrial/ Commercial II, III and IV 5 acre VSIC (2)	Industrial/ Commercial II, III and IV 5 acre PSIC (2)	Industrial/ Commercial II Direct Contact	Surface Soils (Less than 2 feet below surface) ug/Kg	0 to 4 Feet Soil Zone ug/Kg
benzene	220,000	8,400	29,700	3.1E+08	400,000	41	111,985
ethylbenzene	140,000	140,000	7.3E+06	1.9E+10	140,000	25	40,339
toluene	250,000	250,000	2.2E+06	7.9E+09	250,000	48	176,540
xylene	150,000	150,000	3.6E+07	8.6E+10	150,000	199	116,528
acenaphthene	970,000	3.5E+08	6.4E+07	4.1E+09	2.0E+08	2,810	186,543
acenaphthylene	440,000	3.0E+8	1.6E+06	6.6E+08	8.0E+06	20,000	2.5E+06
anthracene	41,000	1.0E+9	1.1E+09	1.9E+10	1.0E+9	23,000	2.1E+06
benzo(a)anthracene	NLL	NLV	NLV	ID	100,000	68,000	2.6E+06
benzo(a)pyrene	NLL	NLV	NLV	1.3E+06	10,000	86,000	2.4E+06
benzo(b)fluoranthene	NLL	ID	ID	ID	100,000	89,000	1.4E+06
benzo(g,h,i) perylene	NLL	NLV	NLV	2.3E+08	9.1E+06	33,000	1.2E+06
benzo(k)fluoranthene	NLL	NLV	NLV	ID	1.0E+06	65,000	1.8E+06
chrysene	NLL	ID	ID	ID	1.0E+07	65,000	2.3E+06
dibenzo(a,h)anthracene	NLL	NLV	NLV	ID	10000	34,422	310,000
fluoranthene	730,000	1.0E+9	5.8E+08	2.7E+09	1.8E+08	110,000	6.5E+06
fluorene	890,000	1.0E+9	9.9E+07	2.7E+09	1.3E+08	6,785	764,310
indeno(1,2,3-cd)pyrene	NLL	NLV	NLV	ID	100,000	33,000	1.1E+06
2-methylnaphthalene	5.5E+06	ID	ID	ID	4.0E+07	7,972	1.6E+06
naphthalene	2.1E+06	470,000	2.3E+05	5.8E+07	8.0E+07	17,599	1.2E+07
phenanthrene	1.1E+06	3.3E+06	7,260	1.9E+06	8.0E+06	65,000	1.3E+07
pyrene	480,000	1.0E+9	5.1E+08	1.9E+09	1.1E+08	110,000	6.5E+06
lead	ID	NLV	NLV	2.9E+07	900,000 (Draft) 1,414,000 (3)	622,232	579,048
cyanide	250,000	NLV	NLV	165,000	250,000	61,132	994,071

(1) Part 201 Generic Cleanup Criteria and Screening Levels (June 7, 2000).

(2) Calculated by multiplying 1/2 acre criterion by 5 acre modifier of 0.66.

(3) Final MDEQ industrial generic direct contact criterion for lead has not been established. U.S. EPA has established an adult screening level of 1,414,000 ug/Kg that is applicable to industrial and construction workers.

(4) Toxic Substances Control Act 40 CFR 781.

GCC = Groundwater contact criteria

VSIC = Volatile soil inhalation criteria (ambient air)

NA = Not Analyzed

ND = Not Detected

SVIIC = Soil volatilization to indoor air inhalation criteria.

PSIC = Particulate soil inhalation criteria (ambient air).

NLL = Chemical is not likely to leach under most conditions.

NLV = Chemical is not likely to volatilize under most conditions.

ID = Inadequate data to develop criterion.

**TABLE 4**  
**SUMMARY OF WASTE CHARACTERIZATION ANALYTICAL RESULTS**  
**SOUTH GREEN AVENUE SITE**  
**DETROIT, MICHIGAN**

ANALYTE	TP-4/19 Characterization 6/29/99	TP-23 Characterization 6/29/99	TP-17 Characterization 6/29/99	TP-9 Characterization 6/29/99	TP-25 Surface 6/29/99	TP-17 Surface 6/29/99	TP-4 Surface 6/29/99	Regulatory Level (1)
<b>Volatile Organic Compounds - Leachate Samples</b>								
benzene (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.5
2-butanone (mg/L)	<2	<2	<2	<2	<2	<2	<2	200.0
carbon tetrachloride (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.5
chlorobenzene (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	100.0
chloroform (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	6.0
1,2-dichloroethane (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.5
1,1-dichloroethene (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.7
tetrachloroethene (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.7
trichloroethene (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.5
vinyl chloride (mg/L)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2
<b>Semivolatile Compounds - Leachate Samples</b>								
1,4-dichlorobenzene (mg/L)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	7.5
2,4-dinitrotoluene (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.13
hexachlorobenzene (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.13
hexachlorobutadiene (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.5
hexachloroethane (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	3.0
cresol (total) (mg/L)	<1	<1	<1	<1	<1	<1	<1	200.0
nitrobenzene (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	2.0
pentachlorophenol (mg/L)	<5	<5	<5	<5	<5	<5	<5	100.0
pyridine (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	5.0
2,4,5-trichlorophenol (mg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	400.0
2,4,6-trichlorophenol (mg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.0
<b>Metals - Leachate Samples</b>								
arsenic (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	5.0
barium (mg/L)	0.4	0.3	0.3	0.7	0.9	0.4	<0.2	100.0
cadmium (mg/L)	0.0022	0.0078	0.0021	0.002	0.0059	0.0025	0.0039	1.0
chromium (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	5.0
lead (mg/L)	0.16	35 / 0.012 / 0.025 (5)	0.13	0.18	0.057	0.047	0.051	5.0
mercury (mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.2
selenium (mg/L)	<0.005	<0.005	<0.005	0.008	<0.005	<0.005	<0.005	1.0
silver (mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	5.0
<b>PARAMETER</b>								
Ignitability	Negative	Negative	Negative	Negative	Negative	Negative	Negative	(2)
Reactive Cyanide (mg/Kg)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	(3)
Reactive Sulfide (mg/Kg)	<100	<100	<100	<100	<100	<100	<100	(3)
Corrosivity (pH)	7.5	8.1	7.6	8.0	8.2	8.5	7.0	(4)

(1) Maximum concentration of contaminants for the toxicity characteristic (40 CFR 261.24)

(2) "Negative" means sample does not exhibit the characteristic of ignitability as defined by 40 CFR 261.21.

(3) The non detection of reactive cyanide and reactive sulfide means the samples do not exhibit the characteristic of reactivity as defined by 40 CFR 261.23

(4) A solid waste exhibits the characteristic of corrosivity if it has a pH less than or equal to 2 or greater than or equal to 12.5 (40 CFR 261.22). None of the samples exhibit the characteristic of corrosivity.

(5) Three leachate samples from TP-23 Characterization were analyzed.

# APPENDIX A

## HEALTH & SAFETY PLAN AMENDMENT

## HEALTH AND SAFETY PLAN AMENDMENT SHEET

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**Project Name:** South Green Avenue Site, Detroit, Michigan

**Project Number:** 106115

**Project Manager:** Daniel Strybel

**Location:** 201 South Green Avenue, Detroit, Michigan

### Changes in field activities or hazards:

The *Final Health and Safety Plan* (November 18, 1998) (subsequently referred to as "Safety Plan") has been amended to include the following:

1. All references and citations to Fluor Daniel GTI are applicable to IT Corporation (IT) since IT purchased Fluor Daniel GTI in 1999.
2. The list of work tasks presented in Section 1.0 of the Safety Plan is expanded to include excavation of soil and debris.
3. The Medical/Technical Advisors listed in Section 6.1 are no longer applicable. The Medical/Technical Advisors are:  
  
Dr. Jerry H. Becke (M.D. MPH)  
1-800-350-4511
4. The project supervisor on Table 13 is George (Randy) Sherman.
  - Appendix D of the Safety Plan has been replaced with IT Procedures HS020: *Accident Prevention Program: Reporting, Investigation, and Review* that is applicable to IT staff.
5. The entire Appendix H of the Safety Plan (Excavation/Trenching) has been replaced with IT's Excavation and Trenching Procedures. These procedures are a part of this Amendment.

Approved by:

Health and Safety Manager \_\_\_\_\_ Date \_\_\_\_\_

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## PROCEDURE

**Subject: ACCIDENT PREVENTION PROGRAM: REPORTING, INVESTIGATION, AND REVIEW**

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### 1.0 PURPOSE AND SUMMARY

The purpose of this procedure is to establish the requirements for incident reporting, investigation, and review. This procedure is an integral part of the company's overall accident prevention program and aids in the determination of causal factors and corrective actions necessary to prevent incident re-occurrence. Key elements of this procedure include:

- **All occupational injuries/illnesses, vehicle accidents, and near miss incidents must be promptly reported and investigated.**
- All Occupational Safety and Health Administration (OSHA) recordable injuries/illnesses and chargeable vehicle accidents must be reviewed by an Accident Review Board. The Accident Review Board report is submitted/approved up through management to the appropriate business line President.
- All incidents involving a fatality, major injury/illness, or resulting in significant property damage will be immediately reported to: the business line Health and Safety Manager; the Vice President, Health and Safety; the business line President; the Vice President, Legal Department; and the CEO.
- All business lines are required to submit a Monthly Loss Report summarizing all incidents that took place during the previous reporting period.

### 2.0 TABLE OF CONTENTS

- 1.0 Purpose and Summary
- 2.0 Table of Contents
- 3.0 Responsibility Matrix
  - 3.1 Procedure Responsibility
  - 3.2 Action/Approval Responsibilities
- 4.0 Definitions
- 5.0 Text
  - 5.1 Incident Reporting Process
  - 5.2 Supervisor's Employee Injury Report
  - 5.3 Vehicle Accident Report
  - 5.4 General Liability, Property Damage, and Loss Report
  - 5.5 Incident Investigation Report
  - 5.6 Accident Review Board
  - 5.7 Insurance Notification

5.5	Monthly Loss Report
6.0	Exception Provisions
7.0	Cross References
8.0	Attachments

### 3.0 RESPONSIBILITY MATRIX

#### 3.1 Procedure Responsibility

The Vice President, Health and Safety is responsible for the issuance, revision, and maintenance of this procedure.

#### 3.2 Action/Approval Responsibilities

The Responsibility Matrix is Attachment 1.

### 4.0 DEFINITIONS

**Chargeable Vehicle Accident** - Any **at-fault** vehicle accident meeting any **one** of the following criteria:

- An individual other than an employee of the company is a party in the accident
- Property owned by a person or entity other than the company is damaged
- When only company employees, company owned or leased (**not** rented) vehicles, and company property is involved and damage exceeds \$1,000.00.

**Company** - All wholly-owned subsidiaries of The IT Group, Inc.

**Lost Workday Case** - Cases which involve days away from work, days of restricted work activity, or both. Days away from work are the number of workdays (consecutive or not), excluding the date of injury, the employee **would have worked**, but could not because of occupational injury or illness; and/or the number of workdays (consecutive or not), excluding the date of injury, on which, because of injury or illness:

- The employee was assigned to another job on a temporary basis;
- The employee worked at a permanent job less than full time; or
- The employee worked at a permanently-assigned job, but could not perform all duties normally connected with it.

**Near Miss Incident** - Any incident where no injury occurred, but where the potential for injury existed.

**OSHA Recordable Case** - All work-related deaths and illnesses, and those work-related injuries which result in loss of consciousness, restriction of work or motion, transfer to another job, or require medical treatment beyond first aid (see Attachment 7).

**Vehicle** - Any passenger vehicle, including trucks, used upon the highway or in private facilities for transporting passengers and/or property. For the purpose of this procedure, off-road vehicles such as earthmoving equipment, forklifts, non-highway use trucks, etc., are not considered vehicles.

## 5.0 TEXT

### 5.1 Incident Reporting Process

Employees are required to immediately report to their direct supervisor all occupational injuries, illnesses, accidents, and near miss incidents having the potential for injury. Any supervisor (but preferably the supervisor directly responsible for the involved employees) with first-hand knowledge of an incident is required to:

- Immediately arrange for appropriate medical attention and notify the responsible health and safety representative.
- Inform Health Resources of all incidents requiring medical attention by calling 1-800-350-4511, and providing the following information:
  - Company Name (The IT Group)
  - Employee Name
  - Name of treating medical facility and phone number
  - Brief description of incident.

Health Resource's role is to interface with the treating physician to ensure that appropriate care is provided to the injured employee.

Complete the *Authorization for Treatment, Release of Medical Information, and Return to Work* (Attachment 8) and the *Supervisor's Employee Injury Report* (Attachment 2) for all cases requiring medical attention. The employee or his/her supervisor is to ensure that these completed forms are faxed to Health Resources at (800) 853-2641 prior to leaving the medical facility or as soon as reasonably possible.

Prior to an injured employee returning to his/her job duties, a follow-up call by Health Resources will be made to the project site. The purpose of this call is to ensure work restrictions are clarified and planned work activities are consistent with medical recommendations.

The supervisor is to initiate/complete the appropriate company documentation in accordance with the following incident classifications:

OSHA Recordable Cases

- a. Supervisor's Employee Injury Report (Attachment 2)
- b. Incident Investigation Report (Attachment 5)
- c. Accident Review Board (Attachment 6)

First Aid Cases

- a. Supervisor's Employee Injury Report (Attachment 2)
- b. Incident Investigation Report (Attachment 5)

Chargeable Vehicle Accidents

- a. Vehicle Accident Report (Attachment 3)
- b. Incident Investigation Report (Attachment 5)
- c. Accident Review Board (Attachment 6)
- d. Driving Record Certification (Procedure HS800)

Non-Chargeable Vehicle Accidents

- a. Vehicle Accident Report (Attachment 3)
- b. Incident Investigation Report (Attachment 5)

Near Miss

- a. Incident Investigation Report (Attachment 5)

Property Damage/General Liability

- a. General Liability, Property Damage, and Loss Report (Attachment 4).

All forms, with the exception of the Accident Review Board and Incident Investigation Report, must be completed and forwarded to the appropriate health and safety representative within **one** business day of the incident.

All incidents involving a fatality, major injury/illness, or resulting in significant property damage are to be reported to the appropriate business line President; Vice President, Health and Safety; Vice President, Legal Department; and CEO as soon as possible, but not later than the close of business on the day of the incident.

## 5.2 Supervisor's Employee Injury Report

The Supervisor's Employee Injury Report (Attachment 2) is to be completed for all incidents that result in an employee occupational injury or illness. It is to be initiated by the supervisor of the injured employee and forwarded to the project/location manager for comments. The appropriate health and safety representative must receive a copy of the report within one business day of the incident.

### **5.3 Vehicle Accident Report**

The Vehicle Accident Report (Attachment 3) must be completed for any vehicle accident in which a company vehicle is involved. This includes company-owned or leased vehicles, rental vehicles, and personal vehicles being used for company business. This report is to be initiated by the employee involved in the accident or his/her direct supervisor, then forwarded to the appropriate health and safety representative.

### **5.4 General Liability, Property Damage, and Loss Report**

The General Liability, Property Damage, and Loss Report is to be used for all losses or damage to company property in excess of \$1,000.00. This form must be completed for all third party property, regardless of value, damaged as a result of company activities. The employee most familiar with the events that contributed to the loss or damage will complete the form, then forward it to the project/location manager. The Corporate Risk Management Department must receive a copy of the report within one business day of the incident.

### **5.5 Incident Investigation Report**

All injuries, illnesses, accidents, and near miss incidents will be investigated. Once arrangements for immediate medical care have been made, the employee's direct supervisor, with assistance from the health and safety representative and/or business line Health and Safety Manager, will:

- Reconstruct the conditions which led to the incident (collect the facts);
- Describe and document (include sketch, photos, etc.) how the incident occurred;
- List witnesses and collect written statements when possible;
- Identify and discuss the causative factors;
- Identify the unsafe act or unsafe condition that contributed to the incident;
- Identify possible systematic/management deficiencies; and
- List the corrective actions which are to be taken to prevent re-occurrence of the incident, the person responsible for the corrective action, and the date by which action is to be completed.

The investigation will be started as soon as possible after the incident and a written report (Attachment 5) submitted to the appropriate health and safety representative within 72 hours. In addition to the previous information, reports from external sources (police, insurance carriers, testing laboratories, etc.) are to be obtained as soon as they become available and forwarded to the recipients of the investigation report.

### **5.6 Accident Review Board**

Each manager whose project/location experiences an OSHA recordable or a chargeable vehicle accident is required to convene an Accident Review Board within **10 days** of the accident. The purpose of the Accident Review Board is to review the information gathered for each incident and take appropriate action to prevent its recurrence. The Accident Review Board shall be composed of the project/location manager, the employee's direct supervisor, a health and safety representative, and the employee(s) involved in the incident. When appropriate, a representative of other internal sources of expertise should be involved.

It is generally not acceptable to discipline an employee for having an accident. However, if the Accident Review Board determines that the accident resulted from an unsafe act or violation of company procedure on the employee's part, the employee should be subject to disciplinary action in accordance with the company's progressive disciplinary action system (see Human Resources Procedure HR207).

#### **5.7 Insurance Notification**

The business line Health and Safety Manager or his/her designee is to report all employee injuries/illnesses requiring outside medical treatment to Constitution State Service Company (CSSC), a subsidiary of Travelers Insurance, within 24 hours of injury/illness occurrence. This may be accomplished by calling CSSC at 1-800-243-2490.

Some states (i.e., Ohio, Washington, and West Virginia) have specific reporting requirements that differ from those previously discussed. Call Gates McDonald Health Plus at 1-800-642-7587 (select option 1) to report injuries requiring medical attention in these states. Assistance for the reporting of incidents that occur in these states can be obtained through the Corporate Risk Management Department office at (412)-380-4097.

All vehicle accidents involving third party individuals or property, with the exception of company-rented Hertz automobiles, will be reported to CSSC by calling 1-800-243-2490 within 24 hours of the accident.

#### **5.8 Monthly Loss Report**

Each business line Health and Safety Manager is responsible to submit a Monthly Loss Report summarizing incidents that took place within their business line during the previous month. The business line Health and Safety Manager is responsible for submitting a consolidated package for the entire business line to the corporate health and safety office for **receipt no later than the 5th working day of the following month.**

### **6.0 EXCEPTION PROVISIONS**

Variances and exceptions may be requested pursuant to the provisions of Procedure HS013, Health and Safety Procedure Variances.

## **7.0 CROSS REFERENCES**

HR207 Disciplinary Action  
HS013 Health and Safety Procedure Variances  
HS800 Motor Vehicle Operations - General Requirements  
HS810 Commercial Motor Vehicles

## **8.0 ATTACHMENTS**

1. Responsibility Matrix
2. Supervisor's Employee Injury Report
3. Vehicle Accident Report
4. General Liability, Property Damage, and Loss Report
5. Incident Investigation Report
6. Accident Review Board Report
7. Injury/Illness Classification Guidelines
8. Medical Forms

## ATTACHMENT 1

### ACCIDENT PREVENTION PROGRAM: REPORTING, INVESTIGATION, AND REVIEW RESPONSIBILITY MATRIX

Action	Procedure Section	Responsible Party					
		Employee	Supervisor	Project/Location Manager	Health and Safety Representative	Business Line Health and Safety Manager	Vice President, Health and Safety
Issue, Revise, and Maintain Procedure	3.1						X
Report All Incidents to Supervisor	5.1	X					
Notify Health and Safety Representative	5.1		X				
Arrange Medical Care	5.1		X		X		
Notify Health Resources or Gates McDonald of Incident	5.1		X		X		
Initiate/Complete Company Forms	5.1		X				
Complete Investigation of Incident	5.5		X	X	X		
Conduct Accident Review Board	5.6		X	X	X		
Report Injury/Accident to CSSC	5.7				X	X	
Complete Monthly Loss Report	5.8					X	

These standard policies and procedures are applicable to all members of The IT Group, Inc., except where superseded or modified by the member Company.

**ATTACHMENT 2**  
**SUPERVISOR'S EMPLOYEE INJURY REPORT**

This report is to be initiated by the employee's supervisor. Please answer all questions completely. This report must be forwarded to the appropriate Health and Safety Representative within 24 HOURS of the injury/illness.

appropriate Health and Safety Representative within 24 HOURS of the injury/illness.

EMPLOYEE	Injured's Name _____ Sex _____ S.S. No. _____ Birth Date _____			
	Home Address _____			
	City _____	State _____	Zip _____	Phone (____) _____
	Job Title _____		Hire Date _____	Hourly Wage _____
SUPERVISOR	Date of Incident _____ Time _____ Time Reported _____ To Whom? _____			
	Project/Location Name _____		Address _____	
	Project No. _____ Time Shift Began _____		Did the Employee Leave Work? <input type="checkbox"/> No <input type="checkbox"/> Yes When _____	
	Has employee returned to work? <input type="checkbox"/> No <input type="checkbox"/> Yes When _____		Did employee miss a regularly scheduled shift? <input type="checkbox"/> No <input type="checkbox"/> Yes	
	Doctor/Hospital Name _____		Address _____	
	Witness Name(s) _____		Statement Attached? <input type="checkbox"/> No <input type="checkbox"/> Yes	
	Nature of Injury _____		Exact Body Part _____	
	Medical Attention: <input type="checkbox"/> None <input type="checkbox"/> First Aid On Site <input type="checkbox"/> Doctor's Office <input type="checkbox"/> Hospital ER <input type="checkbox"/> Hospitalized			
	Job Assignment at Time of Incident _____			
	Describe Incident: _____			
MANAGER	What unsafe condition and/or act contributed to the Incident? _____			
	What Corrective Action has been taken to prevent Recurrence? _____			
	Supervisor: _____ (Print Name) (Signature) (Date)			
HEALTH AND SAFETY	Comments on Incident and Corrective Action _____			
	Project/Location Mgr. : _____ (Print Name) (Signature) (Date)			
Concur with Action Taken? <input type="checkbox"/> No <input type="checkbox"/> Yes Remarks _____				
OSHA Classification: <input type="checkbox"/> First Aid <input type="checkbox"/> Recordable, No Lost/Restricted Workdays <input type="checkbox"/> Recordable, Lost Workdays <input type="checkbox"/> Recordable, Restricted Activity <input type="checkbox"/> Fatality Days away from Work _____ Days Restricted Work _____				
<p><b>All injuries/illnesses requiring outside medical treatment must be reported to CSSC by calling 1-800-243-2490 within 24 hours of the incident. Contact Gates McDonald at 1-800 642-7587 for cases occurring in Ohio, Washington, or West Virginia.</b></p> <p>Workers' Compensation Claim Number (if applicable) _____</p> <p>Health and Safety Representative: _____ (Print Name) (Signature) (Date)</p>				



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ATTACHMENT 3  
VEHICLE ACCIDENT REPORT

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**ACCIDENT DESCRIPTION** This report is to be initiated by the employee involved in the accident or his/her direct supervisor. Please answer all questions completely. This report must be forwarded to the appropriate health and safety representative within 24 HOURS of the accident.

ACCIDENT DATE \_\_\_\_\_ TIME \_\_\_\_\_ ☐ A.M. or ☐ P.M.  
LOCATION OF ACCIDENT (CITY, STATE) \_\_\_\_\_  
DESCRIPTION OF ACCIDENT \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
WITNESS \_\_\_\_\_ PHONE NO. \_\_\_\_\_  
ADDRESS \_\_\_\_\_ CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_  
POLICE OFFICER'S NAME \_\_\_\_\_ DEPARTMENT \_\_\_\_\_

**COMPANY VEHICLE**

DRIVER \_\_\_\_\_ DRIVERS LICENSE NO. \_\_\_\_\_ STATE \_\_\_\_\_  
ADDRESS \_\_\_\_\_ CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_  
WORK PHONE NO. (\_\_\_\_) \_\_\_\_\_ S.S. NO. \_\_\_\_\_ PROJECT NAME/NO. \_\_\_\_\_  
VEHICLE NO. \_\_\_\_\_ YEAR \_\_\_\_\_ MAKE \_\_\_\_\_ MODEL \_\_\_\_\_ LICENSE PLATE NO. \_\_\_\_\_  
STATE \_\_\_\_\_ VEHICLE OWNER: ☐ COMPANY ☐ LEASED/RENTED ☐ PRIVATE VEHICLE  
VEHICLE TYPE: ☐ COMMERCIAL MOTOR VEHICLE ☐ NON-COMMERCIAL  
IF NOT COMPANY-OWNED: OWNER \_\_\_\_\_ PHONE NO. (\_\_\_\_) \_\_\_\_\_  
ADDRESS \_\_\_\_\_ CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_  
VEHICLE DAMAGE \_\_\_\_\_  
NO. OF VEHICLES TOWED FROM SCENE \_\_\_\_\_ NUMBER OF INJURIES \_\_\_\_\_ NUMBER OF FATALITIES \_\_\_\_\_  
WERE HAZARDOUS MATERIALS RELEASED? ☐ NO ☐ YES IF YES, DESCRIBE MATERIALS \_\_\_\_\_  
\_\_\_\_\_

**OTHER VEHICLE**

DRIVER \_\_\_\_\_ DRIVERS LICENSE NO. \_\_\_\_\_ STATE \_\_\_\_\_  
ADDRESS \_\_\_\_\_ CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_  
PHONE NO. (\_\_\_\_) \_\_\_\_\_ S.S. NO. \_\_\_\_\_  
OWNER'S NAME (☐ CHECK IF SAME AS DRIVER) \_\_\_\_\_  
ADDRESS \_\_\_\_\_ CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_  
INSURANCE COMPANY \_\_\_\_\_ POLICY NO. \_\_\_\_\_  
AGENT'S NAME \_\_\_\_\_ PHONE NO. (\_\_\_\_) \_\_\_\_\_  
ADDRESS \_\_\_\_\_ CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_  
VEHICLE YEAR \_\_\_\_\_ MAKE \_\_\_\_\_ MODEL \_\_\_\_\_ PLATE NO. \_\_\_\_\_ STATE \_\_\_\_\_  
VEHICLE I.D. NO. \_\_\_\_\_  
VEHICLE DAMAGE \_\_\_\_\_  
PASSENGERS: ☐ NO ☐ YES INJURIES: ☐ NO ☐ YES (If Yes, list names and telephone numbers below)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**VEHICLE ACCIDENT REPORT**

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WEATHER: ☐ Clear ☐ Cloudy ☐ Fog ☐ Rain ☐ Sleet ☐ Snow Other \_\_\_\_\_  
 PAVEMENT: ☐ Asphalt ☐ Steel ☐ Concrete ☐ Wood ☐ Gravel/Dirt  
☐ Brick/Stone Other \_\_\_\_\_  
 CONDITION: ☐ Dry ☐ Wet ☐ Icy ☐ Pot Holes Other \_\_\_\_\_  
 TRAFFIC CONTROL: ☐ Traffic Light ☐ Stop Sign ☐ Railroad ☐ No Intersection ☐ No Control  
 ROADWAY: Number of Lanes Each Direction: \_\_\_\_\_ ☐ Residential ☐ Divided Highway ☐ Undivided Highway

**Draw and name roadways showing each vehicle direction of travel, and point of impact. Indicate travel before the accident with a solid line, and post-accident movement with a broken line.**

SYMBOLS:

Your Vehicle

Other Vehicle(s)

Pedestrian



Stop Sign



Yield

Railroad



ADDITIONAL INFORMATION:

***All vehicle accidents involving third party individuals or property, with the exception of accidents involving only company-rented Hertz automobiles, must be reported to CSSC by calling 1-800-243-2490 within 24 hours of the accident.***

WAS VEHICLE ACCIDENT REPORTED TO CSSC? ☐ YES ☐ NO CLAIM NUMBER \_\_\_\_\_

EMPLOYEE \_\_\_\_\_ (Print) \_\_\_\_\_ (Signature) \_\_\_\_\_ (Date)

SUPERVISOR \_\_\_\_\_ (Print) \_\_\_\_\_ (Signature) \_\_\_\_\_ (Date)

HEALTH & SAFETY REP. \_\_\_\_\_ (Print) \_\_\_\_\_ (Signature) \_\_\_\_\_ (Date)

REPORT MUST BE CALLED IN OR FAXED TO:  
 CORPORATE HEALTH AND SAFETY (PHONE: 412-372-7701, FAX: 412-858-3976)  
 AND CORPORATE RISK MANAGEMENT (PHONE: 412-380-4097, FAX: 412-380-6218)  
 WITHIN 24 HOURS, OR NOT LATER THAN NEXT BUSINESS DAY

# **ATTACHMENT 5 INCIDENT INVESTIGATION REPORT**

**MUST BE COMPLETED WITHIN 72 HOURS**

Investigation Date \_\_\_\_\_ Date of Incident \_\_\_\_\_

Employee Name \_\_\_\_\_

Supervisor Name \_\_\_\_\_

Project Number/Name \_\_\_\_\_ / \_\_\_\_\_

Location of Incident \_\_\_\_\_

- Incident Classification
 

<u>Injury</u> <input type="checkbox"/> First Aid <input type="checkbox"/> OSHA Recordable <input type="checkbox"/> Lost Workday <input type="checkbox"/> Restricted Workday	<u>Vehicle</u> <input type="checkbox"/> Chargeable <input type="checkbox"/> Non-chargeable  <u>Near Miss</u> <input type="checkbox"/>	<u>DOT</u> <input type="checkbox"/> DOT Vehicle <input type="checkbox"/> DOT Reportable  <u>General Liability</u> <input type="checkbox"/>
--	--	---

- Description (Provide facts, describe how incident occurred, provide diagram [on back] or photos)
 

\_\_\_\_\_

\_\_\_\_\_

- Analysis 1 (What unsafe acts or conditions contributed to the incident?)
 

\_\_\_\_\_

\_\_\_\_\_

- Analysis 2 (What systematic or management deficiencies contributed to incident?)
 

\_\_\_\_\_

\_\_\_\_\_

- Corrective Action(s) (List corrective action items, responsible person, scheduled completion date)
 

\_\_\_\_\_

\_\_\_\_\_

- Witnesses (Attach statements or indicate why unavailable)
 

\_\_\_\_\_

\_\_\_\_\_

Investigated By			
	Print Name	Signature	Date

Project/Location Mgr.			
	Print Name	Signature	Date

(Attach Additional Pages if Needed)



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#### ATTACHMENT 4

### GENERAL LIABILITY, PROPERTY DAMAGE, AND LOSS REPORT

This report is to be completed for all losses or damage to company property in excess of \$1,000.00 and all third party damage, regardless of value, resulting from company activities.

PROJECT/LOCATION \_\_\_\_\_ PROJECT NO. \_\_\_\_\_ DATE \_\_\_\_\_

ADDRESS \_\_\_\_\_

HOW DID DAMAGE OR LOSS OCCUR: \_\_\_\_\_

DESCRIPTION AND VALUE (\$) OF DAMAGED/LOST/STOLEN PROPERTY: \_\_\_\_\_

LOCATION OF DAMAGED/LOST/STOLEN PROPERTY (Before Loss): \_\_\_\_\_

DATE AND TIME OF DAMAGE, LOSS, OR THEFT: Date: \_\_\_\_\_ Time: \_\_\_\_\_ a.m./p.m.

#### OWNER OF DAMAGED/LOST/STOLEN PROPERTY:

Name \_\_\_\_\_ Phone No. ( ) \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_

Employer and Address \_\_\_\_\_

#### INJURED PARTIES (Also complete a Supervisor's Employee Injury Report if a Company Employee):

Name \_\_\_\_\_ Phone No. ( ) \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_

Employer and Address \_\_\_\_\_

Description of Injury \_\_\_\_\_

#### WITNESSES:

1. Name \_\_\_\_\_ Phone No. ( ) \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_

Employer and Address \_\_\_\_\_

2. Name \_\_\_\_\_ Phone No. ( ) \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_

Employer and Address \_\_\_\_\_

WERE PICTURES TAKEN? ☐ YES ☐ NO

WERE POLICE NOTIFIED? ☐ YES ☐ NO DEPT. \_\_\_\_\_ REPORT NO. \_\_\_\_\_

COMPLETED BY: \_\_\_\_\_  
(Print) (Signature) (Date)

PROJECT/LOCATION MANAGER: : \_\_\_\_\_  
(Print) (Signature) (Date)

REPORT MUST BE CALLED IN OR FAXED TO:  
CORPORATE RISK MANAGEMENT (PHONE: 412-380-4097, FAX: 412-380-6218)  
WITHIN 24 HOURS, OR NOT LATER THAN NEXT BUSINESS DAY

These standard policies and procedures are applicable to all members of The IT Group, Inc., except where superseded or modified by the member Company.



ATTACHMENT 6

ACCIDENT REVIEW BOARD

DATE:		LOCATION:	
BOARD MEMBERS:			
ACCIDENT DATE:		EMPLOYEE(S) INVOLVED IN INCIDENT:	
INVESTIGATION COMPLETE: YES <input type="checkbox"/> NO <input type="checkbox"/>		ACCIDENT CLASSIFICATION:	
<b>THE FOLLOWING INFORMATION <u>MUST</u> BE PROVIDED BY THE REVIEW BOARD FOR THIS INCIDENT (PRINT):</b>			
SUPERVISOR: _____		PROJECT/LOCATION MGR.: _____	
CAUSE OF ACCIDENT:			
ACTION BY BOARD*:			
* ALL ACTIONS BY THE ACCIDENT REVIEW BOARD ARE SUBJECT TO FINAL REVIEW BY THE HUMAN RESOURCES AND LEGAL DEPARTMENTS.			
ACCEPTED:			
_____ (Employee Signature)		_____ (Supervisor Signature)	
APPROVED:		REJECTED FOR:	
_____ (Project/Location Manager)		_____	
APPROVED:		REJECTED FOR:	
_____ (Business Line Health and Safety Manager or Designee)		_____	
APPROVED:		REJECTED FOR:	
_____ (Business Line Vice President)		_____	

## ATTACHMENT 7

### INJURY/ILLNESS CLASSIFICATION GUIDELINES

**Medical Treatment** - The following are generally considered medical treatment. Work-related injuries for which this type of treatment was provided or should have been provided are almost always recordable.

- Treatment of **INFECTION**;
- Application of **ANTISEPTICS during second or subsequent visit** to medical facility;
- Treatment of **SECOND OR THIRD DEGREE BURN(S)**;
- Application of **SUTURES** (stitches);
- Application of **BUTTERFLY ADHESIVE DRESSING(S) or STERI STRIP(S)** in lieu of sutures;
- Removal of **FOREIGN BODIES EMBEDDED IN EYE**;
- Removal of **FOREIGN BODIES FROM WOUND**; if procedure is **COMPLICATED** because of depth of embedment, size, or location;
- Use of **PRESCRIPTION MEDICATIONS** (except a single dose administered on first visit for minor injury or discomfort);
- Use of hot or cold **SOAKING THERAPY during second or subsequent visit** to medical facility;
- Application of hot or cold **COMPRESS(ES) during second or subsequent visit** to medical facility;
- **CUTTING AWAY DEAD SKIN** (surgical debridement);
- Use of **WHIRLPOOL BATH THERAPY during second or subsequent visit** to medical facility;
- **POSITIVE X-RAY DIAGNOSIS** (fractures, broken bones, etc.); and
- **ADMISSION TO A HOSPITAL** or equivalent medical facility **FOR TREATMENT**.

**First Aid Treatment** - The following are generally considered first aid treatment (i.e., one-time treatment and subsequent observation of minor injuries) and should not be recorded if the work-related injury does not involve loss of consciousness, restriction of work or motion, or transfer to another job:

- Application of **ANTISEPTICS during first visit** to medical facility;
- Treatment of **FIRST DEGREE BURN(S)**;
- Application of **BANDAGE(S)** during any visit to medical facility;
- Use of **ELASTIC BANDAGE(S) during first visit** to medical facility;
- Removal of **FOREIGN BODIES NOT EMBEDDED IN EYE** if only irrigation is required;
- Removal of **FOREIGN BODIES FROM WOUND**; if procedure is **UNCOMPLICATED**, and is, for example, removed by tweezers or other simple technique;
- Use of **NON-PRESCRIPTION MEDICATIONS AND** administration of **single doses of PRESCRIPTION MEDICATION** on first visit for minor injury or discomfort;

- **SOAKING THERAPY** on initial visit to medical facility or removal of bandages by **SOAKING**;
- Application of hot or cold **COMPRESS(ES)** during first visit to medical facility;
- Application of **OINTMENTS** to abrasions to prevent drying or cracking;
- Use of **WHIRLPOOL BATH THERAPY** during first visit to medical facility;
- **NEGATIVE X-RAY DIAGNOSIS**; and
- **OBSERVATION** of injury during visit to medical facility.

The following procedure, by itself, is not considered medical treatment:

- Administration of **TETANUS SHOT(S)** or **BOOSTER(S)**. However, these shots are often given in conjunction with more serious injuries; consequently, injury requiring these shots may be recordable for other reasons.

**Loss of Consciousness** - If an employee loses consciousness as the result of a work-related injury/illness, the case must be recorded no matter what type of treatment was provided. The rationale behind this recording requirement is that loss of consciousness is generally associated with the more serious injuries.

**Restriction of Work or Motion** - Restricted work activity occurs when the employee, because of the impact of a job-related injury, is physically or mentally unable to perform all or any part of his or her normal assignment during all or any part of the workday or shift. The emphasis is on the employee's ability to perform normal job duties. Restriction of work or motion may result in either a lost worktime injury or a non-lost worktime injury, depending upon whether the restriction extended beyond the day of injury.

**Transfer to Another Job** - Injuries requiring transfer of the employee to another job are also considered serious enough to be recordable regardless of the type of treatment provided. Transfers are seldom the sole criterion for recordability because injury cases are almost always recordable on other grounds, primarily medical treatment or restriction of work or motion.



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## ATTACHMENT 8 MEDICAL FORMS

### AUTHORIZATION FOR TREATMENT OF OCCUPATIONAL INJURY/ILLNESS

Employee Name: \_\_\_\_\_  
Social Security #: \_\_\_\_\_  
Job Title: \_\_\_\_\_  
Project/Location: \_\_\_\_\_  
Telephone #: \_\_\_\_\_  
H&S Representative: \_\_\_\_\_  
Body Part(s) Injured: \_\_\_\_\_  
Describe in detail how incident occurred: \_\_\_\_\_  
Injury: ☐ Illness: ☐  
Incident Date: \_\_\_\_\_  
Location of Accident/Exposure: \_\_\_\_\_

#### TO TREATING PHYSICIAN:

In the case of occupational injury/illness, please examine the employee and render necessary conservative treatment directly related to the occupational injury/illness.

#### Light Duty Work:

It is the policy of our company to provide work assignments, whenever possible, for employees with physical activity restrictions resulting from an occupational injury/illness. If the employee will be subject to a restriction, please contact **Health Resources** before releasing the employee, so that a light duty assignment may be arranged.

#### Medically Unfit to Return to Work:

It is the policy of our company to assist employees unable to return to work, due to an injury/illness, in obtaining needed medical care and other available benefits. Medical findings are also used to help evaluate unsafe conditions that may have led to the incident. Please help us assist our employees by contacting **Health Resources** with your findings as soon as possible, preferably before the employee leaves your office, but not later than the close of business on the day of initial treatment.

**Health Resources:** Telephone: 1-800-350-4511 Fax: (800) 853-2641

Please Send Reports To: **Health Resources**  
600 West Cummings Park, Suite 3400  
Woburn, Massachusetts 01801

Please Send Bills To: Workers' Compensation Claims Administrator  
Constitution State Service Company (Travelers)

#### DOCTOR, Please provide:

Medical Diagnosis: \_\_\_\_\_  
Treatment Provided: \_\_\_\_\_

Recommended Work Limitation/Restriction: \_\_\_\_\_  
Return Visit Needed: No ☐ Yes ☐ Date if Yes: \_\_\_\_\_ First Aid Only ☐  
Physician Name: \_\_\_\_\_ Physician Telephone: \_\_\_\_\_  
Physician Signature: \_\_\_\_\_ Date: \_\_\_\_\_

YOU MUST CALL HEALTH RESOURCES FOR ALL OCCUPATIONAL INJURIES/ILLNESSES  
REQUIRING OUTSIDE MEDICAL TREATMENT: 1-800-350-4511.  
FAX COMPLETED FORM TO HEALTH RESOURCES (800) 853-2641.



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**ATTACHMENT 8B  
MEDICAL FORMS**

**AUTHORIZATION FOR RELEASE OF MEDICAL INFORMATION**

I, \_\_\_\_\_, grant authorization to \_\_\_\_\_  
(Print Full Name) (Treating Physician's Name)  
for the release of any information concerning my occupational injury/illness to:

**HEALTH RESOURCES**

600 West Cummings Park, Suite 3400  
Woburn, Massachusetts 01801  
Phone: (800) 350-4511  
Fax: (800) 853-2641

for the purpose of disability follow-up and return to work authorization.

Please provide the following information:

**EMPLOYEE INFORMATION:**

Full Name: \_\_\_\_\_  
Date of Birth: \_\_\_\_\_  
Social Security #: \_\_\_\_\_  
Home Address: \_\_\_\_\_  
  
Home Phone: \_\_\_\_\_  
Work Phone: \_\_\_\_\_

**MEDICAL INFORMATION:**

Treating Physician's Name: \_\_\_\_\_  
Physician's Address: \_\_\_\_\_  
  
Phone Number: \_\_\_\_\_  
Fax Number: \_\_\_\_\_

Employee Signature: \_\_\_\_\_ Date: \_\_\_\_\_



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ATTACHMENT 8C  
MEDICAL FORMS

RETURN-TO-WORK EXAMINATION FORM

Exam Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Employee Name: \_\_\_\_\_  
Birth Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Social Security #: \_\_\_\_-\_\_\_\_-\_\_\_\_  
Job Title: \_\_\_\_\_ Sex: Male Female

Examining Provider: Please complete this form and fax to Health Resources at (800) 853-2641. Please contact Health Resources at (800) 350-4511 to report status of employee post-treatment.

DIAGNOSIS: \_\_\_\_\_

TREATMENT PLAN: \_\_\_\_\_

MEDICATIONS: \_\_\_\_\_

PHYSICAL THERAPY: \_\_\_\_\_

OTHER: \_\_\_\_\_

May return to full duty work effective \_\_\_\_/\_\_\_\_/\_\_\_\_

May return to limited duty from \_\_\_\_/\_\_\_\_/\_\_\_\_ to \_\_\_\_/\_\_\_\_/\_\_\_\_

Unable to return to work from \_\_\_\_/\_\_\_\_/\_\_\_\_ to \_\_\_\_/\_\_\_\_/\_\_\_\_

WORK LIMITATIONS:

Restricted lifting/pushing/pulling: maximum weight in lbs: \_\_\_\_\_ (company limits all lifting to 60 lbs).

Work only with right/left hand.

Restricted repetitive motion right/left hand.

Sitting job only.

Restricted operation of moving equipment.

Other: \_\_\_\_\_

FOLLOW-UP PLAN:

Release from care.

Schedule for follow-up appointment on \_\_\_\_/\_\_\_\_/\_\_\_\_.

Time \_\_\_\_\_ AM/PM

Referral to \_\_\_\_\_

Appointment date \_\_\_\_/\_\_\_\_/\_\_\_\_ Time \_\_\_\_\_ AM/PM

Comments: \_\_\_\_\_

Examiner's Name (print)

Examiner's Signature

Date

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## PROCEDURE

**Subject: EXCAVATION AND TRENCHING**

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### 1.0 PURPOSE AND SUMMARY

The purpose of this procedure is to describe the company requirements for excavation and trenching safety. These requirements are based on the federal Occupational Safety and Health Administration (OSHA) excavation standard found in 29 Code of Federal Regulations (CFR) 1926, Subpart P.

Some company activities are likely to occur in states or localities that either currently have or will have requirements that differ from those contained within the federal standard. In such circumstances, the local health and safety representative will be responsible for ensuring that these requirements are included in either a site health and safety plan or a similar document and conveyed to all affected employees. If federal, state, or local regulations vary or conflict, the more protective requirements and practices will be followed.

### 2.0 TABLE OF CONTENTS

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5.2.13 Fall Protection

6.0 Exception Provisions

7.0 Cross Reference

8.0 Attachments

### **3.0 RESPONSIBILITY MATRIX**

#### **3.1 Procedure Responsibility**

The Vice President of Health & Safety is responsible for the issuance, revision, and maintenance of this procedure.

#### **3.2 Action/Approval Responsibilities**

The Responsibility Matrix is Attachment 1.

### **4.0 DEFINITIONS**

#### **Accepted Engineering Practices**

Those requirements or practices which are compatible with standards required by a registered professional engineer.

#### **Angle of Repose**

The greatest angle above the horizontal plane at which a material will lie without sliding.

#### **Benching**

A method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels of steps, usually with vertical or near-vertical surfaces between levels.

#### **Competent Person**

An employee who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous or dangerous to employees and who has the authority to take prompt corrective measures to eliminate them.

#### **Company**

All wholly-owned subsidiaries of the IT Group, Inc.

#### **Excavation**

Any man-made cut, cavity, trench or depression in an earth surface, including its sides, walls, or faces, formed by earth removal.

#### **Registered Professional Engineer**

An individual currently registered as a professional engineer (preferably civil) in the state where work is to be performed.

#### **Sheeting**

Members of a shoring system that retain the earth in position and in turn are supported by other members of the shoring system.

### **Shield**

A structure that is able to withstand the forces imposed on it by a cave-in and thereby protect employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. Shields may be pre-manufactured or job-built in accordance with 1926.652(c)(3) or (c)(4). Shields used in trenches are usually referred to as "trench boxes" or "trench shields".

### **Shoring**

Structure such as a metal hydraulic, mechanical, or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins.

### **Sloping**

A method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.

### **Support System**

A structure such as underpinning, bracing, or shoring, which provides support to an adjacent structure, underground installation, or the sides of an excavation.

### **Tabulated Data**

Tables and charts approved by a registered professional engineer and used to design and construct a protective system.

### **Trench**

A narrow (in relation to its length) excavation made below the surface of the ground. In general, the depth is greater than the width at the bottom, but the width of a trench at the bottom is not greater than 15 feet.

### **Type A Soil**

Cohesive soils with an unconfined compressive strength of 1.5 ton per square foot (tsf) (144kPa) or greater. Examples of cohesive soils are: clay, silty clay, sandy clay, clay loam and, in some cases, silty clay loam and sandy clay loam. Cemented soils such as caliche and hardpan are also considered Type A. However, soil is NOT Type A if:

- The soil is fissured;
- The soil is subject to vibration from heavy traffic, pile driving, or similar effects;
- The soil has been previously disturbed;
- The soil is part of a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or greater; or

- The material is subjected to other factors that would require it to be classified as a less stable material.

#### **Type B Soil**

This classification refers to:

- Cohesive soil with an unconfined compressive strength greater than 0.5 tsf (48 kPa) but less than 1.5 tsf (144 kPa)
- Granular cohesionless soils including: angular gravel (similar to crushed rock), silt, silt loam, sandy loam, and, in some cases, silty clay loam and sandy clay loam.
- Previously disturbed soils except those which would otherwise be classified Type C soil;
- Soil that meets the unconfined compressive strength or cementation requirements for Type A, but is fissured or subjected to vibration;
- Dry rock that is not stable; or
- Material that is part of a sloped, layered system where the layers dip into the excavation on a slope less steep than four horizontal to one vertical (4H:1V), but only if the material would otherwise be classified as Type B.

#### **Type C Soil**

This classification refers to:

- Cohesive soil with an unconfined compressive strength of 0.5 tsf (48 kPa) or less;
- Granular soils including gravel, sand, and loamy sand;
- Submerged soil or soil from which water is freely seeping;
- Submerged rock that is not stable; or
- Material in a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or steeper.

## **5.0 TEXT**

### **5.1 Pre-Excavation Requirements**

- 5.1.1 Underground Utilities.** Prior to opening an excavation, the estimated location of underground utilities such as sewer, telephone, fuel, electric, water, or any other underground installation that may be reasonably expected to be encountered during the excavation work shall be determined.

Utility companies or a utility location service shall be contacted within the established pre-notification time, advised of the proposed work, and asked to delineate the location of all underground utilities. Employees should be careful to protect and preserve the utility markings until they are no longer required for safe excavation. At least 3 feet of clearance between any underground utility and the cutting edge or point of powered excavation equipment will be maintained until the precise location of the utility is determined. Initial excavation within this 3 foot area will be conducted manually.

**5.1.2 Surface Encumbrances.** All surface encumbrances (trees, poles, boulders, etc.) that may create a hazard to employees shall be removed or supported.

**5.1.3 Vehicular Traffic.** Employees exposed to vehicular traffic shall be provided with, and shall wear, warning vests or other suitable garments marked with or made of reflectorized or high-visibility material. Traffic control devices (i.e., barricades, signs, cones, flagpersons, etc.) shall be specified and used in accordance with regulations applicable to the roadway or area in which excavation activities are occurring.

**5.1.4 Training.** Those who supervise the entry of personnel into an excavation must have completed a training course that included instruction in:

- Types of hazards associated with excavation operations;
- Safe work practices and techniques;
- A review of applicable Federal, state and local regulations; and
- A review of this procedure.

Employees who enter excavations are required to complete a site-specific training session to enable them to recognize unsafe conditions in and around the excavation. This training can be conducted during a tailgate safety meeting that emphasizes the specific excavation hazards that may be encountered.

Training documentation shall be maintained in the project file with a copy forwarded to the Knoxville Training Department.

As part of standard employee supervision process, training shall be complemented with on-the-job instruction and reinforcement of accepted practices to the extent necessary to assure compliance with this procedure and all other applicable regulations.

## 5.2 Excavation Work Practices

**5.2.1 General.** Each employee working within an excavation shall be protected from cave-ins by an adequate protective system designed in accordance with 29 CFR 1926 Subpart P, except when the excavation is made entirely in stable rock or when the excavation is less than 5 feet deep and examination of the ground by a competent person provides no indication of a potential cave-in. A competent person shall ensure that protective systems, when required, are installed and maintained per the design specifications.

No employees shall be permitted to enter an excavation unless it is absolutely essential to do so and all requirements of this procedure are met.

**5.2.2 Supervision.** Work in an excavation shall at all times be supervised by a competent person. This individual will remain outside of the excavation at all times, and will be responsible for identifying any unusual developments above ground which may warn of impending earth movement.

**5.2.3 Soil Classification.** Based on the results of tests described in Attachment 3, the competent person will classify each soil/rock deposit as stable rock, Type A, Type B, or Type C. When layers of soil/rock exist, the weakest layer will be classified; however, each layer may be classified individually when a more stable layer lies under a less stable layer. If the properties or conditions of a soil/rock deposit change in any way, re-evaluation will be required.

**5.2.4 Access and Egress.** Structural ramps that are used solely by employees as a means of access or egress from excavations shall be designed by a competent person. Structural ramps used for access or egress of equipment shall be designed by a competent person qualified in structural design, and shall be constructed in accordance with the design.

A stairway, ladder, ramp or other safe means of egress shall be located in trench excavations that are 4 or more feet in depth so as to require no more than 25 feet of lateral travel for employees.

**5.2.5 Protective Systems.** Protective systems shall be designed in accordance with 29 CFR 1926.652(b) or (c) and shall have the capacity to resist without failure all loads that are intended or could reasonably be expected to be applied or transmitted to the system.

**5.2.6 Exposure to Falling Loads.** No employees shall be permitted underneath loads handled by lifting or digging equipment. Employees shall be required to stand away from any vehicle being loaded or unloaded to avoid being struck by spillage or falling materials. Operators may remain in the cabs of vehicles being loaded or

unloaded provided the vehicles are equipped with a cab shield and/or canopy adequate to protect the operator from shifting or falling materials.

**5.2.7 Warning System for Mobil Equipment.** When mobile equipment is operated adjacent to an excavation, and the operator does not have a clear and direct view of the edge of the excavation, a warning system shall be utilized such as barricades, hand or mechanical signals, or stop logs.

**5.2.8 Hazardous Atmospheres.** Where an oxygen deficient (less than 19.5% O<sub>2</sub>) or hazardous atmosphere exists, or could reasonably be expected to exist, the excavation shall be tested before employees enter. Testing shall be conducted as often as necessary to ensure that the atmosphere remains safe. Some excavations may be considered confined spaces which require compliance with IT Procedure HS300.

Adequate precautions shall be taken to prevent employee exposure to oxygen deficient or hazardous atmospheres. As appropriate, ventilation and/or respiratory protective devices shall be used.

**5.2.9 Water Accumulation Hazards.** Employees shall not work in excavations in which there is accumulated water, or in excavations in which water is accumulating, unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation. If water is controlled or prevented from accumulating by the use of water removal equipment, the process shall be monitored by a competent person to ensure proper operation.

If the excavation work interrupts the natural drainage of surface water (streams, run-off channels), diversion ditches, dikes, or other suitable means shall be used to prevent surface water from entering the excavation and to provide adequate drainage of the area adjacent to the excavation. Excavations subject to run-off from heavy rains shall be regularly inspected by a competent person.

**5.2.10 Stability of Adjacent Structures.** Structures adjoining an excavation shall be evaluated to assess their stability. Excavation below the level of the base or footing of any foundation or retaining wall that could reasonably be expected to pose a hazard to employees shall only be permitted when:

- A support system (underpinning) is provided to ensure the safety of employees and the stability of the structure;
- The excavation is in stable rock;
- A registered professional engineer has determined that the structure will be unaffected by the excavation; or
- A registered professional engineer has determined that such excavation will not pose a hazard to employees.

Sidewalks, pavements and other surface structures shall not be undermined unless a support system or another method of protection is provided to protect employees from the possible collapse of such structures.

**5.2.11 Protection from Loose Rock or Soil.** Employees shall be protected from loose rock or soil which could fall or roll from the excavation face or edge. Such protection could consist of scaling to remove loose materials, or the installation of protective barriers. All spoil shall be placed at least 2 feet from the edge of the excavation. It is strongly recommended that spoil be placed 4 or more feet from the excavation edge so as not to cover surface indicators of subsidence (such as fissures or cracks).

**5.2.12 Inspections.** The competent person shall make daily inspections of excavations, adjacent areas, and protective systems for evidence of conditions that could result in a cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. The inspection shall be made prior to start of work, and as needed throughout the shift. Inspections shall be made after each rainstorm or other hazard-increasing event and will be documented using Attachment (2).

Where the inspection finds evidence of any hazardous condition, exposed employees shall be immediately removed from the hazardous area until necessary precautions have been taken.

**5.2.13 Fall Protection.** Where employees or equipment are permitted to cross over excavations, walkways or bridges shall be provided. Standard guardrails shall be provided where walkways are 6 feet or more above lower levels.

Adequate barriers or other types of physical protection shall be provided at all remotely located excavations. All wells, pits, shafts, etc., shall be barricaded or covered and shall be backfilled as soon as possible.

## **6.0 EXCEPTION PROVISIONS**

Variances and exceptions may be requested pursuant to the provisions of procedure HS013, Health and Safety Procedure Variances.



**7.0 CROSS REFERENCES**

HS013 Health and Safety Procedure Variances  
HS050 Training Requirements  
HS051 Tailgate Safety Meetings  
HS300 Confined Spaces  
29 CFR 1926 Subpart P - Excavations

**8.0 ATTACHMENTS**

1. Responsibility Matrix
2. Excavation Inspection
3. Soil Classification Worksheet
4. Selection of Protective Systems for Excavations 20 Feet or Less in Depth
5. Sloping Options
6. Shoring or Shielding Options

## ATTACHMENT 1 EXCAVATION AND TRENCHING

### Responsibility Matrix

Action	Procedure Section	Responsible Party					
		Employee	Supervisor	Registered Professional Engineer	VP Health and Safety	Local H&S Representative	Competent Person
Incorporate state, local, or client-specific excavation requirements into project plans.	1.0					X	
Issue, revise, and maintain procedure	3.1				X		
Coordinate identification of underground utilities.	5.1.1		X				
Determine need for traffic control devices.	5.1.3		X				
Participate in excavation training.	5.1.4	X	X			X	X
Ensure that protective systems are installed and maintained.	5.2.1						X
Classify Soil Type	5.2.3						X
Design Structural Ramps	5.2.4						X
Selection and design of protective system(s)	5.2.5			X			
Determine stability of adjacent structures.	5.2.10			X			
Inspecting excavation for hazardous conditions	5.2.12	X	X				X

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These standard policies and procedures are applicable to all members of The FT Group, Inc., except where superseded or modified by the member Company.



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ATTACHMENT 2  
EXCAVATION INSPECTION

THIS INSPECTION IS TO BE COMPLETED BY THE COMPETENT PERSON  
EACH DAY THAT EMPLOYEES WILL BE ENTERING AN EXCAVATION.

Project Name: \_\_\_\_\_ Project No.: \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Competent Person: \_\_\_\_\_

Soil Classification (see Soil Classification Worksheet): \_\_\_\_\_

Excavation Depth: \_\_\_\_\_ Excavation Width: \_\_\_\_\_

Type of Protective System Used: \_\_\_\_\_

	✓		
	YES	NO	N/A
<b>1. GENERAL:</b>			
Surface encumbrances removed or supported			
Employees protected from loose rock or soil that could pose a hazard by falling or rolling into the excavation.			
Hard hats, steel-toed boots, and safety glasses worn by all employees.			
Spoils, materials, and equipment set back at least 2 feet from the edge of the excavation.			
Walkways over excavations 6 feet or more above lower levels are equipped with standard guardrails.			
Warning vest or other highly visible clothing provided and worn by all employees exposed to public vehicular traffic.			
Employees required to stand away from vehicles being loaded or unloaded.			
Warning system established and utilized when mobile equipment is operating near excavation edge.			
Employees prohibited from going under suspended loads.			
<b>2. UTILITIES:</b>			
Utility companies contacted and/or utility locations delineated.			
Underground installations protected, supported, or removed while excavation is open.			
<b>3. MEANS OF ACCESS AND EGRESS:</b>			
Lateral travel to means of egress no greater than 25 feet in trench excavations 4 feet or more in depth.			
Ladders used in excavations secured and extended 3 feet above the edge of the trench.			
Structural ramps used by employees designed by a competent person.			
Structural ramps used for equipment designed by a registered professional engineer.			

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	YES	NO	N/A
<b>4. WET CONDITIONS:</b>			
Precautions taken to protect from the accumulation of water.			
Water removal equipment monitored by a competent person.			
Surface water or runoff diverted or controlled to prevent accumulation in the excavation.			
Inspections made after every rainstorm or other hazard-increasing occurrence.			
<b>5. HAZARDOUS ATMOSPHERE:</b>			
Atmosphere within the excavation tested where there is a reasonable possibility of an oxygen deficient, combustible, or otherwise hazardous atmosphere.			
Adequate precautions taken to protect employee from exposure to a hazardous atmosphere.			
Testing conducted to ensure that the atmosphere remains safe.			
Emergency equipment, such as breathing apparatus, safety harness and line, and basket stretcher readily available where hazardous atmosphere does exist.			
<b>6. SUPPORT SYSTEMS:</b>			
Materials and/or equipment for support systems selected based on soil analysis, trench depth, and expected loads.			
Materials and equipment used for protective systems inspected and in good condition.			
Damaged materials and equipment used for protective systems inspected by a Registered Professional Engineer after repairs and before being placed back into service.			
Protective systems installed without exposing employees to the hazards of cave-ins, collapses, or from being struck by materials or equipment.			
Members of support systems securely fastened to prevent failure.			
Support systems provided to insure stability of adjacent structures, buildings, roadways, sidewalks, walls, etc.			
Excavations below the level of the base or footings approved by a registered professional engineer.			
Removal of support systems progresses from the bottom, and members are released slowly as to note any indication of possible failure.			
Excavation of material to a level of greater than 2 feet below the bottom of the support system and only if the system is designed to support the loads calculated for the full depth.			
Shield system placed to prevent lateral movement.			
Employees are prohibited from remaining in shield system during vertical movement.			
<b>7. REMARKS:</b>			

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### ATTACHMENT 3 SOILS CLASSIFICATION WORKSHEET

The following worksheet outlines the visual and manual tests that the competent person must perform at least once, and each time soil conditions change. At least one visual and one manual test must be performed; however, performing several tests is recommended so that the condition of the excavation is thoroughly examined.

Project Name: \_\_\_\_\_ Project Number: \_\_\_\_\_

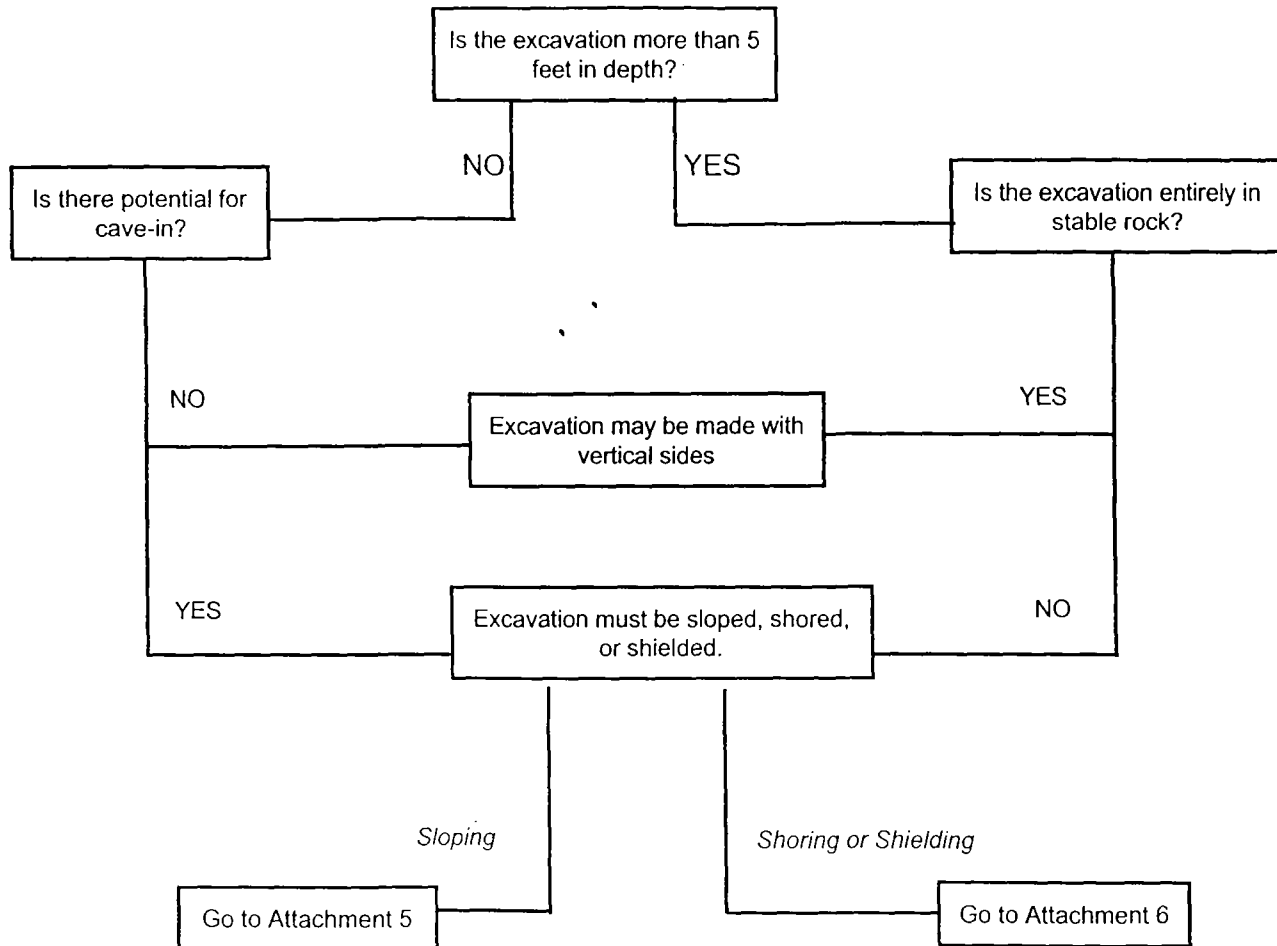
Date: \_\_\_\_\_ Time: \_\_\_\_\_

Where was the sample taken from? \_\_\_\_\_

<b>I. VISUAL TESTS: One or more visual tests are required for each classification and each time conditions change.</b>			
1.	Estimate range of particle sizes:	a. primarily fine-grained = cohesive material b. primarily coarse-grained = granular material	
2.	Observe excavated soil:	a. clumps = cohesive material b. breaks up easily = granular material	
3.	Observe sides and adjacent surface area of opened excavation:	a. crack like openings = fissured material b. soil spalls off vertical sides = possible fissured material	
4.	Previous excavation activities:	a. previously disturbed soil	b. not previously disturbed soil
5.	Observe opened side of excavation:	a. layered systems c. estimate degree of slope of layers: _____	b. layers sloped towards excavation
6.	Water condition:	a. evidence of surface water c. depth of water table : _____	b. water seeping from sides
7.	Vibration present:	a. area adjacent to excavation	b. area within excavation
<b>II. MANUAL TESTS- One or more manual tests are required for classification and each time soil conditions change.</b>			
1.	Plastically- soil is cohesive if following is true:	a. mold soil samples into a small ball b. roll ball into thread 1/8" diameter c. pick up 2" length of 1/8" thread by one end without breaking	
2.	Dry Soil Strength:	a. crumbles on its own or with moderate pressure = granular b. falls into clumps which break into smaller clumps that are only broken with difficulty = clay with gravel, sand, or silt. c. breaks into clumps which do not break into smaller clumps and can only be broken with difficulty with no visual indication of fissures = unfissured.	
3.	Thumb penetration test: (These tests are to be run on a large clump of material as soon as it is excavated.)	a. can be easily indented by the thumb but penetrated by thumb only with great effort = Type A b. easily penetrated several inches by thumb and molded by light finger pressure = Type C	
4.	Unconfined Compressive Strength: (Saturated Soil Needed)	a. Pocket Penetrometer reading (take 10 readings and average) 0 - 0.5 = Type C, 0.5 - 1.5 = Type B, 1.5 - 2.0 = Type A b. Shear Vane reading X2. 0 - 0.5 = Type C, 0.5 - 1.5 = Type B, 1.5 - 2.0 = Type A	
5.	Drying Test (A dry soil sample 1" thick X 6" diameter is needed)	a. develops cracks = fissured material b. dries without cracks and breaks by hand with considerable force significant cohesive content = unfissured cohesive material. c. sample breaks easily by hand = fissured cohesive or granular material d. easily pulverize dry clumps by hand or by stepping on them = granular e. don't pulverize easily = fissured cohesive.	
SOIL CLASSIFICATION:      Type A                      Type B                      Type C                      Stable Rock                      Other _____			
COMPETENT PERSON: _____ <div style="display: flex; justify-content: space-between; width: 100%;"> <span>Print Name</span> <span>Signature</span> <span>Date</span> </div>			

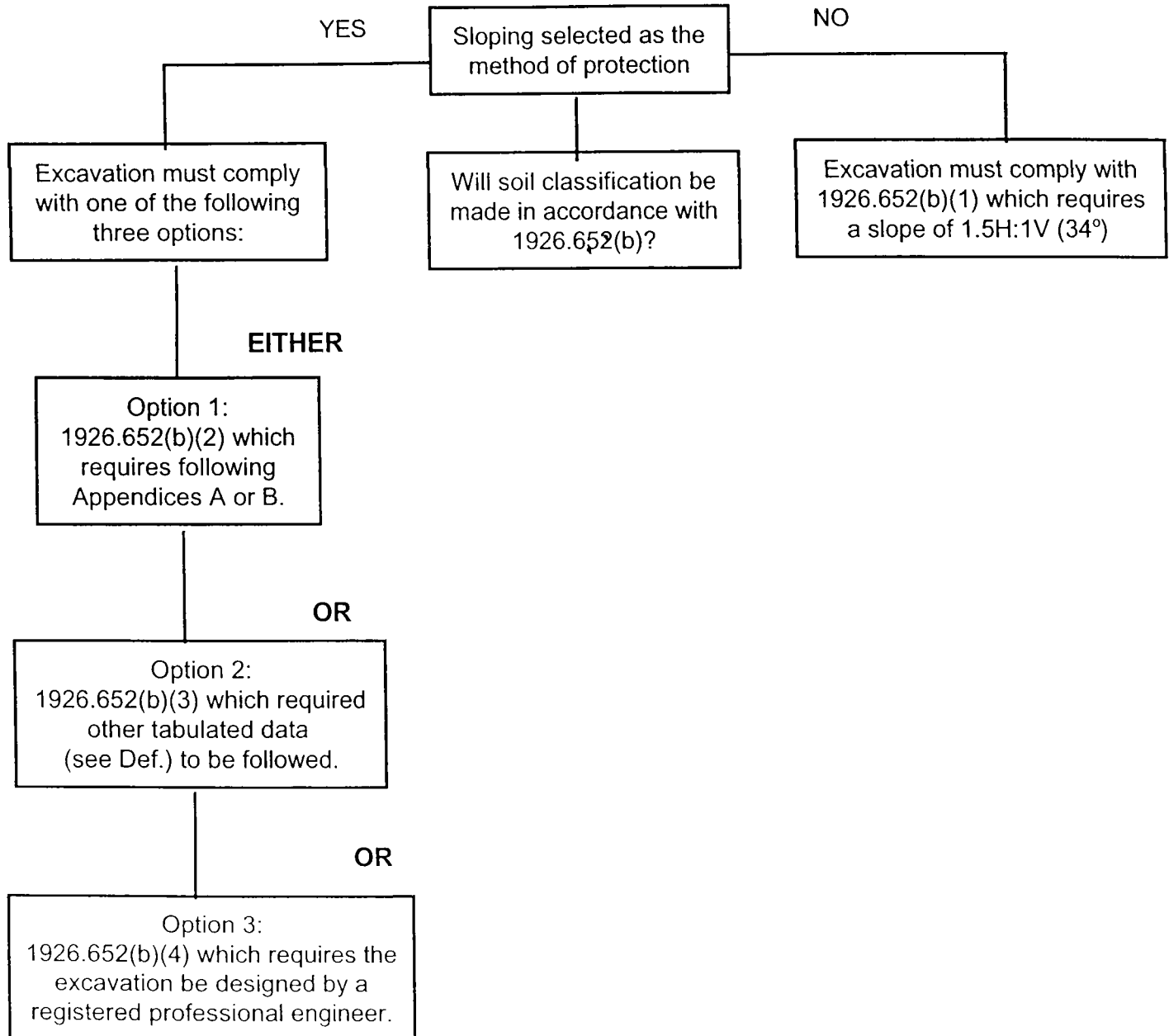
These standard policies and procedures are applicable to all members of The TF Group, Inc., except where superseded or modified by the member Company.

**ATTACHMENT 4**  
**SELECTION OF PROTECTIVE SYSTEMS FOR EXCAVATIONS 20 FEET OR LESS IN DEPTH**



For excavations greater than 20 feet in depth, design by a registered professional engineer in compliance with 1926.652 (b) and (c) is required.

**ATTACHMENT 5  
SLOPING OPTIONS**



**ATTACHMENT 6  
SHORING OR SHIELDING OPTIONS**

